REPORT

UPON

YELLOW FEVER IN LOUISIANA

IN 1878

AND SUBSEQUENTLY.

BY S. M. BEMISS, M. D.

READ BEFORE THE STATE MEDICAL SOCIETY AT SHREVEPORT, APRIL 6th, 1883.

Reprinted from New Orleans Medical and Surgical Journal for August and September, 1883.

NEW ORLEANS:
L. Graham & Son, Printers and Stationers, 127 Gravier Street.
1883.

REPORT

—UPON—

YELLOW FEVER IN LOUISIANA

IN 1878 AND SUBSEQUENTLY.

BY S. M. BEMISS, M. D.

LOUISIANA STATE MEDICAL SOCIETY LIBRARY

[Read before the State Medical Society at Shreveport, April 6th, 1882.]

Yellow Fever made its first appearance in New Orleans in 1796. Perhaps it is more strictly correct to say that the first recorded epidemic occurred during that year.

From that time to the present, thirty-six more or less extensive epidemics have prevailed in New Orleans, exclusive of that of 1796. Some of these have been very destructive to life; and all of them have inflicted losses upon individuals, and retardation of growth and prosperity upon the city.

These statements are based upon Dr. Chaillé's statistics, and it is safe to assume, as he does, that of the intervening forty-nine non-epidemic years, not more than seven have transpired without one or more cases of yellow fever.

New Orleans was the starting point of the epidemic of 1878, in so far as this country is concerned. This is sufficiently well substantiated by two facts: First,—cases of the disease occurred in New Orleans at earlier dates than at any other points of epidemic prevalence. Second,—in the great majority of instances of the occurrence of cases of

yellow fever in other localities, proofs of its direct or indirect derivation from New Orleans, were too strong to be set aside. In cases where the trail could not be distinctly followed, the presumptive evidence that the infection started from New Orleans, was impossible of negation.

The first alleged cases of yellow fever in New Orleans, in 1878, were the purser and engineer of the steamship Emily Souder, plying between New Orleans and Havana. The purser came on shore sick, on the 23d of May. The engineer was attacked on the 24th of May, after having left the ship.

There has been a good deal of controversy regarding the diagnosis of these cases. While the physician in attendance upon the first of these cases returned the death as being due to "malarial fever," it is a very significant fact that the patient died at 2 o'clock, A. M., and was buried at 10, A. M., of the same day, no public announcement of the death or funeral being made until several days after their occurrence.

It is neither necessary, nor important to a consistent history of the epidemic of 1878, that a connection shall be shown to have existed between the Souder cases above referred to, and those which followed them. During the interval between the arrival of the Souder, May 23d, and the date of the first unquestionable case, July 14th, there arrived at the port of New Orleans thirty-three vessels from Havana, Kingston, Matanzas, Progresso, Rio de Janeiro, Tuxpan, and Vera Cruz. Eighteen of these were from Havana.

That the readers of this report may be more fully informed in regard to the probability of importation through other sources than the Souder, upon her 23d May arrival, the following report from the resident physician at the quarantine station is inserted.

"In July, there were 36 permits; crews, 636; foreign passengers, 50; domestic passengers, 64, and collections, $736. On the 17th, the bark Pottsjevnan, 43 days from Rio, with a cargo of coffee, reported one death from yel-

low fever on the voyage. During this month, the bark Felisa, in ballast from Havana, arrived and reported one death from yellow fever; while on board there was, at the same time, one convalescent from the same disease. On the 29th, the schooner F. T. Richardson, from Matanzas, arrived with two cases of yellow fever on board. One of these, i. e., a colored sailor, was placed in hospital and died. The other, Mrs. Caroline Bellano, the wife of the captain, was treated on board of the schooner, and recovered."

The Pottsjevnan reached the city on the 18th, the Felisa on the 26th. In the meantime, since the Souder's arrival on the 23d May, with her supposed cases of yellow fever, she had made three other trips to Havana and returns, arriving at New Orleans June 13th, July 2d, and July 20th. On her arrival here July 2d, having left Havana June 25th, she was undoubtedly an infected vessel, if the following extract from the report made by Dr. T. Hutson Ford is correct:

"Dr. A. P. Sankford gives the following information with regard to the case of W. P. O'Bannon, very probably one of the first in the United States, and the first or second in St. Louis: 'Young O'Bannon, who was born in Missouri and reared in St. Louis, left this city in the steamer Commonwealth for New Orleans, Capt. Shields, his uncle, in command, late in June, 1878, holding the position of assistant second clerk. O'Bannon lived on the Commonwealth, and while at New Orleans, about the 3d or 4th July, went on board the Emily B. Souder, then lying at the levee, notwithstanding the prohibition of his uncle against his going on board any such vessel. The Souder had lately arrived from the West Indies, with a cargo of sugar, and at the time of O'Bannon's visit had two cases of yellow fever on board, which had apparently escaped the vigilance of the authorities. It is not probable, however, that O'Bannon came in direct contact with these cases. The Commonwealth lay close to the Souder at the time, and transferred to her deck from the brig five hundred hogsheads of sugar for the Belcher Refining Company in St. Louis. It is not known that O'Bannon went into the hold of the Souder during the process of transfer, nor is it probable that he did so, as his duty as clerk required his presence on the deck of the Commonwealth. From the

time of the transfer until the 12th July, involving the entire period of the return trip of the Commonwealth to St. Louis, young O'Bannon, who was only sixteen years of age, was romping and playing among the hogsheads of sugar, which were on the main deck of the Commonwealth, with his sister and his cousin, neither of whom were subsequently affected. He arrived in St. Louis on the night of Thursday, July 11, 1878, and seemed perfectly well on the Sunday following, being seen on that day by Dr. Sankford on a visit to the family. The next day (Monday) he complained of inappetence, and of slight chilly sensations. About 5, P. M., he was found by his mother, after a prolonged search, under the piano in the parlor, in high fever, and a profound sleep, from which it was very difficult to arouse him.

Dr. Sankford being called, saw him at 1, P. M., on July 16th. The stupor continued, and the fever did not abate; the tongue was inclined to be dry, and the skin devoid of moisture. The bowels had been constipated, urine scanty and high colored. There was, as yet, no nervous irritability of the stomach, but much thirst. These symptoms increased in intensity, the patient became delirious in the night, and the fever was observed to be of a continuous character. Some irritability of the stomach had now appeared. At a consultation with Dr. J. K. Banduy next day (Thursday), the fever was noted as still continuous; there was frequent vomiting, and about 8, P. M., ejection of unmistakable black vomit, which had begun some five hours previously, the dejections were also very dark. There was no very marked icterus until the morning after this, when suppression of the urine was also determined. The patient died on Friday, 19th July, 1878, at about 1, P. M., the fifth day of his disease.

At this date there was no declared yellow fever in the United States except the cases on board the Emily B. Souder, none as yet reported in New Orleans or elsewhere. At the consultation on the 18th July, the case was declared to be one of yellow fever, and the diagnosis was thoroughly verified at the autopsy, Drs. Sankford, Banduy and P. G. Robinson being present. See statements of Drs. Banduy and Robinson."

In further support of a probability that yellow fever infection was introduced into New Orleans, through other vessels than the Souder, I call attention to the following

important fact, furnished me by Dr. William Martin, of the U. S. Navy: On the 3d June, 1878, the Martha, a lower coast packet, arrived in New Orleans with two cases of sickness on board. These sick persons had been put on shore at some point not definitely mentioned below the Quarantine Station, and had made their way to a landing of the packet Martha, and obtained passage to the city on board of her. Col. J. T. Robb, of Chicago, who furnished Dr. Martin with these facts, affirms that the cases were undoubtedly yellow fever. The Captain of the Martha, recently interviewed by Dr. Martin, does not remember the facts as above stated, but admits that it was a frequent occurrence for sailors either to be put on shore from ships, or voluntarily to leave them at various points on the river, and reach the city by means of the coast packets. The records of the Martha show that she actually arrived in the city on the 3d day of June. Mr. Edward Hernandez, agent of the Souder, Margaret and Tappahanock, all running between New Orleans, Havana and Key West, testified before the Congressional Committee that the Tappahanock arrived June 2d, and the Margaret June 7th. The Customhouse records place the arrival of the Tappahanock June 3d, and her day of departure from Havana, May 25th. The Margaret arrived on the 7th of June, having left Havana, June 1st. The sick men alluded to may have left the Tappahanock or some one of four other ships which arrived the same day from West India ports.

On the other hand it must be conceded that the general history of yellow fever comprises examples of the occurrence of epidemics, which were preceded by cases separated by as long an interval from the first recognized epidemic irruption, as that observed in the history of the epidemic at New Orleans, in 1878.

There are two rational methods of explaining this seeming incongruity with the usual period of yellow fever incubation. The first is, that the cases forming the intermediate links, may not have been recognized by the medical attendant, or may have been intentionally concealed.

The other is, that the poison may have smouldered so long because no unprotected person chanced to come within range of its infection.

Whether either of these suppositions is correct, we must admit that the term "incubation" is very inexactly used, when employed to describe the intervals, whether long or short, between cases of yellow fever, without indicating precisely whether it relates to the period of quiescence of the poison in the human body after known exposure to yellow fever poison; or whether reference is made to the length of time the poison may smoulder or retain its power to infect, outside of the human system. The former period is so definitely marked, that longer than ten days is a matter for just criticism and investigation, while those life cycles which limit its activity as a toxic agent are unknown to us.

While it is impossible to prove when or where the first case of yellow fever occurred among the inhabitants of New Orleans in 1878, it is perfectly well known that those early cases which were recognized, were, for the most part, in the families of persons whose occupations exposed them to danger of receiving the infection from shipping, either while in the harbor, or upon the river, between the city and the jetties.

It must be stated, in this connection, that the historical fact, which more than all others proves that the starting point of the infection in New Orleans was among the shipping, or in other words the harbor, is the record of the tow-boat John D. Porter. This boat left New Orleans on the 18th July, and must have obtained in the harbor the poison which she afterwards distributed through her voyage of more than a thousand miles. The first case in Charity Hospital, which was admitted July 18th, was attacked on the 15th and had come up the river from the jetties about the 10th.

At this date no case of yellow fever had been officially reported to the Board of Health, but it is almost certain that cases had occurred, even as early as the last week of

June. Perhaps the best authenticated of these is the case of Mrs. Wasson, at No. 122 Constance.

Some three or four other cases have been reported to the writer, one of them dated as early as June 17th, but as they have not been satisfactorily proven to be cases of yellow fever, they are not included in this historical summary. It is, however, proper to be mentioned, that on the 11th July, I was called to see a child residing at No. 155 Constance, who had been attacked on the 7th of the month with a chill, followed by fever, was out on the street on the 8th and sick again on the 9th. On the 11th I was called to see him, and found, not only from the history, but from the curative influence of quinine, a case of malarial intoxication. On the 13th, the child became worse, his fever being persistent, and no longer influenced by quinine. On the 18th, hemorrhage, black vomit and death occurred, convulsions attending the last hours. At that time no case of yellow fever was supposed by the family or myself to have existed in the neighborhood of the patient. But simultaneously with the occurrence of this case, the locality became so intensely infected, that no possible doubt can exist in regard to the agency of preceding cases in bringing about this condition.

But there is indubitable testimony to show that several yellow fever foci existed in New Orleans at date of July 15th to 20th.

It would appear, however, that little was known of these facts by the Board of Health, and still less among the busy marts of commerce of the city.

The following extract from an editorial in the *Times* of July 22d shows the amount of information possessed by one of the daily journals of the city at that date:

"Never was our city more healthy than at present. There is neither yellow fever, nor even severe malarial fevers here. The fevers which do exist are such as may be found everywhere at this season, and yield readily to treatment. The heat has not been as intense here as in hundreds of other localities further north, and cases of death from that cause are so infrequent that their occur-

rence creates astonishment. Therefore, we say to all, without fear of contradiction, that New Orleans is to-day the pleasantest city in the Union, as well as the healthiest."

After it became known that yellow fever had really obtained a threatening foothold in New Orleans, the attention of the medical profession was generally directed to it, and its progress more correctly reported. On the 25th July, the President of the Board of Health sent the following telegram to Pensacola:

"Twenty-three cases, all told. Thirteen deaths. Ten convalescents. Not epidemic. Hope to control by disinfection.

SAM'L CHOPPIN."

When a portable disease makes its appearance in one part of a populous city, the manner of its spread to other parts, it is often impossible to trace satisfactorily. About the 25th July, the disease suddenly appeared at the corner of General Taylor and St. Charles streets. This is one of the cleanest and most inviting parts of the city, and is more than a mile distant from the Constance street focus previously referred to. There is, however, strong evidence supporting the belief that the infection was carried to this point in the clothing of a seamstress who lived in the infected part of Constance street, No. 78, and who went home at night to return the next morning to the family in which she found daily employment, and in which the first cases in this part of the city appeared.

By reference to Map No. 1*, illustrating the outbreak of yellow fever in New Orleans, the reader will be enabled to see what a comparatively small portion of the area of the city had been reached by yellow fever during the month of July.

The locality of over one hundred and forty cases is indicated on this map, more than two-thirds of which can be traced to the Constance street focus.

The following reports made to the Board of Health at its meeting August 1st, show quite definitely the prevalence and spread of yellow fever in the city up to that date:

* Not published.

"The president announced that the sanitary inspectors of the first and second districts have been too busy to make their monthly reports.

Dr. Landry, sanitary inspector of the

SECOND DISTRICT,

in his report for July, says: The prevalence of yellow fever and the all-absorbing interest in its progress felt by the entire population, have withdrawn public attention from the general health of the district which, save the few cases of yellow fever already reported, has been very fair. But this scourge, which hitherto has principally confined its ravages to the first district, is now slowly creeping across Canal street, and it is to be feared that within a fortnight there will be cases all over the district from Canal to Esplanade.

The sanitary inspector of the

THIRD DISTRICT

reports that during the month, that locality has been entirely free from yellow fever. Malarial fevers have prevailed to some extent, but there have been but seven deaths.

Attention is again called to the filthy condition of the streets and gutters. Under the circumstances, the inspector is surprised to see the locality so healthy.

The gutters are covered with green scum, and when cleaned the foul matter is not removed. Disagreeable and sickening odors arise from Claiborne Canal, particularly at night, and this in itself is sufficient to create disease.

There were three cases of small-pox during the month.

The sanitary inspector of the

FIFTH DISTRICT

reports that the health of Algiers remains good, there not being a case of small-pox or yellow fever. There were quite a number of cases of intermittent fever, but not one resembling yellow fever.

The streets are in bad condition owing to the small number employed, and a fish pond in which the fish are dying, located in McDonoughville, is a great nuisance.

The sanitary inspector of the

SIXTH DISTRICT

reports the health of that locality excellent. One case diagnosed as yellow fever occurred at the corner of Coliseum and Peniston streets, was reported July 22d, on the sixth day of illness.

An attempt to disinfect was prevented by unknown parties, who emptied the tank during the night. An attempt to disinfect has not been resumed, there having been no other case in the district.

The sanitary inspector of the

SEVENTH DISTRICT,

reports the general health good, with a slight increase of malarial fever. There have been no contagious or infectious diseases during July. Owing to heavy rains the streets are in a poor condition, but the drainage of the district is good, and a little industry would remedy the evil.

Dr. Choppin in a brief address gave a sketch of the disease from its first inception on the 12th of July.

The first point in which the disease existed was that focus bounded by Magazine, Chippewa, Thalia and Felicity streets.

The second infected locality was bounded by Magazine, Poydras, Julia and the river.

The third focus lay between St. Joseph, Girod, Magazine and Tremé streets.

Another focus occurred in the section bounded by St. Joseph, Girod, Liberty and Tremé and Conti streets, extending as far back as Galvez. A sixth is on Customhouse between Royal and Bourbon, with a few cases in the section bounded by Josephine, Coliseum and Philip streets. Every case outside of these was recent, and he hoped, by the use of carbolic acid, to eventually exterminate the disease."

At noon, July 31st, total number of cases reported was 135—deaths, 39.

Estimating the population of the city at 200,000 remaining at date of 1st of August, one in 1474 had been attacked

by yellow fever. The mortality rate up to the above date was 28.88 per cent. of persons attacked.

During the month of August, the number of cases of yellow fever reported in the city was 5974, and deaths 876. While some cases and deaths were reported during the month of August from every district in the city, the epidemic prevailed with greatest violence in the First and Second Districts, which alone returned 803 deaths of the 876 occurring in the whole city. Reports from the First District, however, include the number of deaths during the month of August from Charity Hospital, Hotel Dieu, and Touro Infirmary. The mortality rate for August was 14.66 per cent. If we venture to suppose the population of the city was reduced during the month by flight of the inhabitants, to 190,000, one in thirty-two of those remaining suffered an attack of yellow fever.

The Annual Report of the State Board of Health, and the reports of the daily press, are so erroneous in respect to the number of cases which actually occurred in the city during the remainder of the epidemic, that correct computations cannot be based upon them. One serious difficulty in getting correct records of cases or deaths from yellow fever in New Orleans, rests upon the fact that a number of leading practitioners here hold to a belief, that persons born, and continually resident here, enjoy immunity from attacks. These physicians generally experience in their practice a large increase in the prevalence and fatality of malarial diseases during epidemics of yellow fever. The number of deaths returned as resulting from the various forms of malarial fever in 1878 was 793, while in 1877 they amounted to 418. Prior to the 1st of August, 1878, at which time we may say yellow fever became seriously prevalent, 114 deaths were ascribed to malarial fevers, and 679 deaths were returned as due to the same causes during the remainder of the year. In 1877, up to 1st of August, 179 deaths were returned from the same causes, and 239 for the remainder of the year.

It is so generally true that two formidable diseases do not prevail as epidemics co-existing in the same population, that it is reasonable to assume that a large percentage of deaths returned as due to malarial fever, was really from yellow fever.

For my own part, I can affirm that I attended but very few undoubted malarial cases during the prevalence of yellow fever, and even these few—less than ten—occurred during the early part, and again in the waning of the epidemic. On the other hand, I attended very many patients through undoubted attacks, who were natives of New Orleans, and who had spent their whole lives in the city.

Dr. Dowler, in writing of the liability of native children to yellow fever, uses the following language:

"Now we will suppose, as in 1867, a sweeping epidemic of yellow fever should make its appearance. A portion of the cases will be called, by certain gentlemen of the faculty, paludal fever, etc. But, as it invariably results, as it did in that year, that such cases appear, spread and disappear 'pari passu' with the prevailing epidemic, when the cause of yellow fever disappears also, the proof is plain that the cases have no paludal origin, and that there are no circumstances of difference of causation; and, therefore, logically, no difference in the effects of that causation—that is to say, the aforesaid paludal fever, so-called, is one of the types of yellow fever.

The logical and historical method teaches us with all the certainty of which any such subject is susceptible, that all individuals, natives or otherwise, however old or young, that have not already undergone the disease, are all equally subject to the disease, and that when we are in possession of the fact of acclimation or non-acclimation we have the means of determining, in the most positive manner, who is to take the disease and who is not, and of determining in a positive manner all the disputed cases that have arisen on symptomological and pathological grounds during previous epidemics. During the late epidemic (1867) I was perfectly certain that five of my own children would take yellow fever, and that three would not, and the grounds were that three were born before the epidemic of 1858, and that the five were born subsequently, and the event proved the conclusion. No one who has paid due attention to the logi-

cal and historical method could doubt the existence of yellow fever of Creoles previously to 1853, or could fail to recognize why it was that the cases in the memorable epidemic of that season were numerically greater than ever before; or have failed to realize why it was that all native children under five years were attacked with the disease; or why it was that in 1854 and 1855 all native children under one year of age suffered; or how it was that in 1858 all native children under three years of age were attacked; or, moreover, how it was that in the epidemic of 1867 all children under ten years old, forming a far greater number of children than were ever attacked in any one year before in this city, suffered from yellow fever.

If the logical and histological method has not settled all this beyond controversy, then there can be nothing settled in the science of medicine.

The great number of children who have been attacked during the epidemic of 1878 has been remarked as a singular fact, which may be explained in accordance with the above theory. The number of deaths of children born since 1867, is 50 per cent. of the entire mortality."

The aggregate number of cases which occurred in New Orleans, from the beginning to the close of the epidemic, was not less than 27,000, and the number of deaths not less than 4500. The sanitary census of the Fourth District of New Orleans, taken in 1877, gives a population of 36,365 white and colored, of whom 28,848 gave no history of previous attacks of yellow fever. The number of cases of yellow fever occurring in this District in 1878 was 6092, being 17 in each 100 of whole number of inhabitants of the District. If we allow the same percentage of attacks to the whole population of the city, and place that at 196,000, it would result that more than 27,000 persons had suffered attacks of yellow fever in the whole city. This method of calculation is liable to the criticism that a larger ratio of the population in the lower Districts of the city was protected by previous attacks than in the Fourth District. While this is undoubtedly true, it must be taken into account that a larger proportion of persons fled from the Fourth District, which would probably offset this disturbing cause.

The mortality rate for the whole city, according to the above computation, was 16.66 per cent.; thus 1666 persons died in every 10,000 cases of the disease. The results of private practice in New Orleans are exhibited in the following statistics: Four of the principal practitioners in the city treated in private practice 975 patients—909 white and 66 colored. Of the former, 92, or 10.11 per cent., died; of the colored, only 2 died.

The cases and deaths among the whites, classified by age, are as follows:

AGE.	CASES.	DEATHS.	PER CT.
Under 5 years of age.....	206	26	12.67
From 5 to 10 years of age...	233	20	8.61
" 10 to 20 " " ...	183	9	4.9
" 20 to 40 " " ...	232	39	16.7
" 40 to 60 " " ...	47	6	12.7
" 60 to 80 " " ...	4	2	.50

The physicians above quoted lived in different parts of the city. All of them extended their visits and professional services to the sick to the very limits of physical endurance, and consequently included in the above lists some patients who were not able to procure the comforts and attention necessary to the sick. Some cases also were included to which the physician was only brought, that he might sign the death certificate and so avoid the coroner's inquest. After making allowance for increase of mortality on these scores, I think it safe to assert that the best results obtained in private practice varied from 7 to 10 per cent. of mortality rate.

No efforts were made by the health authorities of New Orleans to establish camps of refuge. During the month of August, about one thousand persons of that part of the population generally called "Diegos," being for the most part emigrants from the islands of the Mediterranean,

formed a camp near the river above the city. Dr. S. L. Henry gives the following description of them:

"They were not camped in the strict sense of the word, as with few exceptions they occupied vacant dwellings along the Mississippi river, to the extent of about four miles, and some distance back on the Metairie ridge, which is about one mile from the river, with a low, boggy swamp intervening. The houses were crowded, often to overflowing, until the disease attacked some of them; then they scattered and sought new places of abode, in some instances abandoning the sick to death.

"Everything considered, the mortality among them was not great, being about 15 per cent. They exercised no discretion in diet, eating all kinds of green fruit in all stages of the disease. They seldom died but from imprudence. Their therapeutical armamentarium was confined to oleum ricini and orange leaf decoction *ad libitum*. In a few instances they camped under some of the live oaks on Metairie ridge for a short time while the weather was dry. Those in houses had no bedsteads, sleeping on the floor. With few exceptions, they aired their bedding daily, when the weather was suitable, and seldom remained in doors when they were able to be about. The disease attacked those of middle age mostly, next the young, seldom the old. The fatality was greatest among the first named class, not because of the disease alone, but because of their uncontrollable dispositions.

"According to the best information I can obtain, from one-third to one-fourth of their number suffered attacks of yellow fever."

I do not consider it proper to enter at this point upon any discussion of the different theories held respecting the indigenous, or imported origin of the epidemic of 1878. Relying upon the facts, herein stated, the various members of the commission joined me in the opinion that the infection was imported through passengers, or parties arriving in New Orleans in vessels, sailing from foreign infected ports.

Touching the spread of the disease after its introduction; personal intercourse, and occupancy of contiguous localities were the only strongly marked factors.

The agency of winds in conveying the yellow fever was not sufficiently marked to justify any assertions in regard to it. It made its appearance in quite a number of pretty widely scattered families in Algiers immediately after a severe norther, which had lasted nearly or quite twelve hours. Some observers thought that the poison was borne by the strong current of air, from one shore of the river to the opposite.

The monitor Canonicus was anchored in the river very much closer to the Algiers shore than to New Orleans, and as the fever had broken out on board some days before the wind storm, some concluded that the poison was blown from her to Algiers.

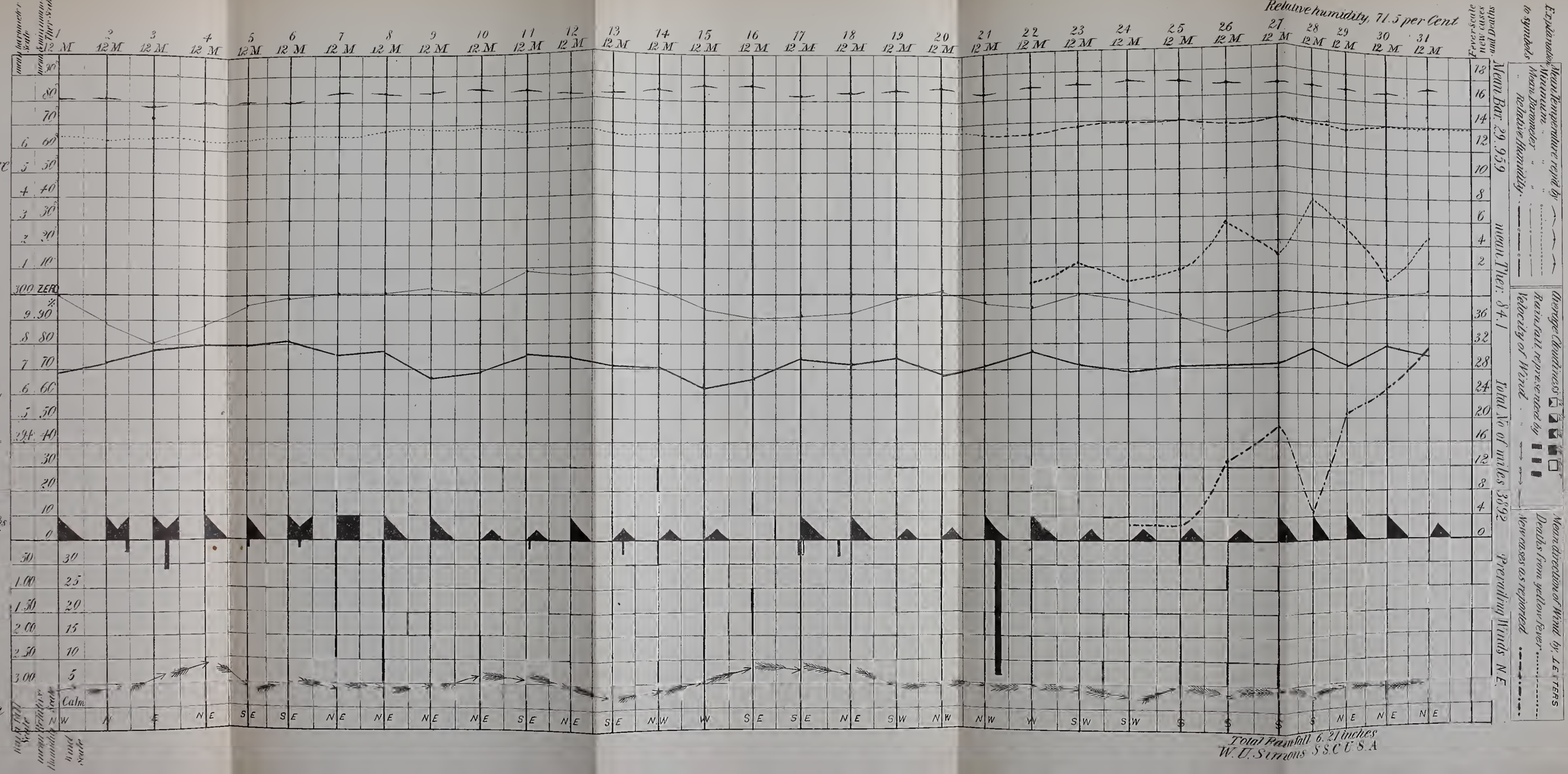
The first case of fever on the Canonicus occurred Aug. 20th. The following is Dr. Armstrong's testimony regarding its appearance in Gretna:

"Dr. J. D. Armstrong, sworn: I have been a practising physician in New Orleans and vicinity since 1869. The first case of yellow fever in Gretna made its appearance early in September, some time after it had been declared epidemic in New Orleans. The first case originated about one square from the river. The communication between New Orleans and Gretna was uninterrupted during the season, and there was no quarantine. I was not in Gretna in 1870 and 1871, and do not know whether there was any fever there then or not. I visited McDonoughville, and there saw some twenty cases. The wind for several weeks past had been blowing from the south-west. There were some cases in Algiers, almost immediately opposite the place where the Canonicus was lying, in the Gardere family."

While I wish, in this immediate connection, to refer the reader to Sergeant Simon's diagrams, I am obliged to say that I saw nothing extraordinary in the appearance of the clouds or other atmospheric conditions prior to or during the epidemic. I know of no observation which supports the belief in "yellow fever clouds," and feel disposed to place them alongside of Mr. Glaisher's cholera clouds, which is simply saying they may theoretically exist, but are yet impossible of practical detection and definition.

YELLOW FEVER WEATHER CHART FOR JULY, 1878.

SHOWING THE WEATHER AND THE PROGRESS OF THE FEVER AT NEW ORLEANS, LA



YELLOW FEVER WEATHER CHART FOR AUGUST, 1878.

SHOWING THE WEATHER AND THE PROGRESS OF THE FEVER AT NEW ORLEANS, LA

Mean Thermometer

Minimum temperature

Yellow Fever deaths.

Mean Barometer

Mean Relative humidity

Yellow Fever new cases as reported by NewsPapers

Average Clouds in 4ths

Total Rainfall in inches & hundredths

mean Winds { Velocity / Direction

Relative Humidity

Explanation of symbols

Mean Temperature read by

Minimum " " "

Mean Barometer " " "

Relative Humidity " " "

Average Cloudiness represented by

Rainfall represented by

Velocity of Wind " "

Mean direction of Wind by LETTERS

Deaths from yellow fever

New cases as reported

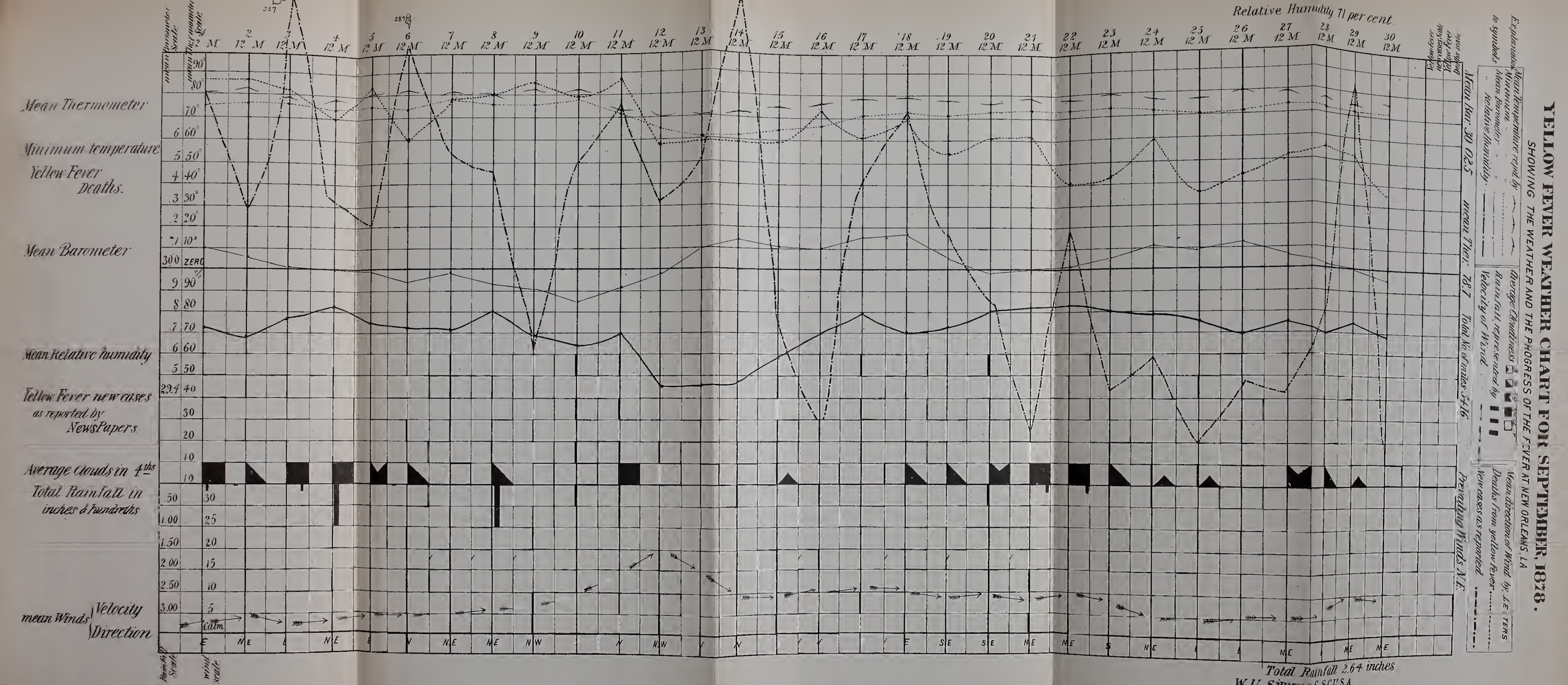
Mean Bar. 29.956 Mean Ther. 83.5 Total No. of Cases 4133 Prevailing Wind S.E.

Total Rain Fall 5.31

W. U. Simons. S. S. C. U. S. A.

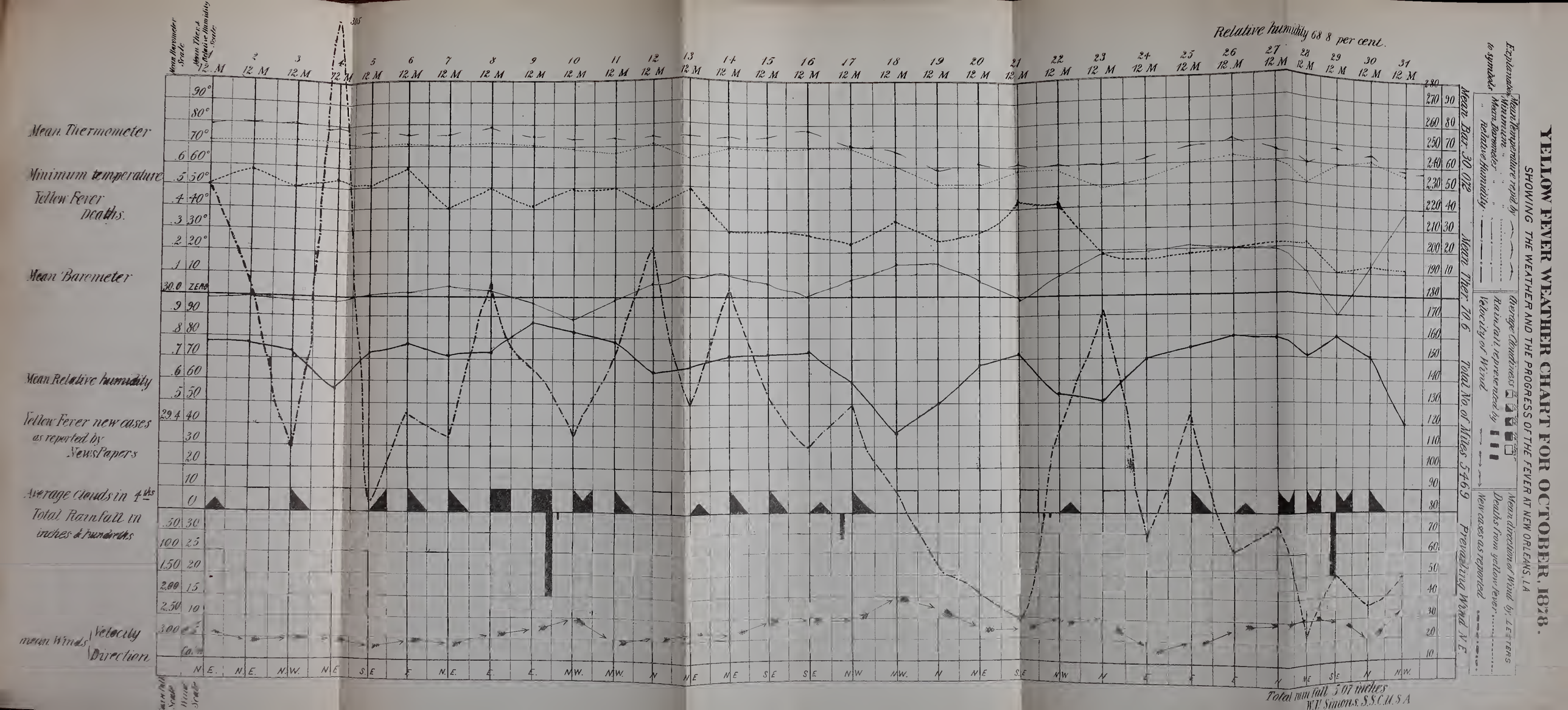
YELLOW FEVER WEATHER CHART FOR SEPTEMBER, 1878.

SHOWING THE WEATHER AND THE PROGRESS OF THE FEVER AT NEW ORLEANS, LA



YELLOW FEVER WEATHER CHART FOR OCTOBER, 1878.

SHOWING THE WEATHER AND THE PROGRESS OF THE FEVER AT NEW ORLEANS, LA



While the general fact is well understood that some correlation of certain meteorological conditions, favors, if it does not determine epidemics of yellow fever, we are not yet able to formulate them with precision. I place high readings of the thermometer at the head of the list of these conditions, but we should possibly count as of equal importance suitable moisture, and some unknown pabulum adapted to the support and multiplication of the poison or its further maturation or toxic-evolution, if either such change occurs outside the human body: For the theory which holds, that yellow fever infection is an organism, must suppose some form of pabulum for the nourishment of the organic entity.

Without further comment at this time, I introduce here the very interesting and carefully prepared diagrams of Sergeant W. U. Simons:

Explanations to the "Yellow Fever Weather Charts," designed and prepared for the "Yellow Fever Commission" by W. U. Simons, Serg't Sig. Corps, U. S. A.

"In the preparation of these charts I have tried to make them as clear and easy to understand as I could to do them in one color, which was done for cheapness of lithography: had they been executed in a variety of colors they would have been much easier to understand. As it is, I have made them as plain as possible by following the same way of illustrating each instrument of meteorological portion by the same symbol throughout, and in each chart having the line representing the new cases and that representing the deaths, the same.

The scale used is the same in every case, except the fever scales in one for July, which I made smaller in number to the square simply because in July, the first few deaths and cases would have been hard to find on the chart had I caused the scale to run in tens, as in the other months.

I have not prepared one for November because at the begining of that month the epidemic was virtually at an

end. The reason I have made one for the entire month of July was to show what the conditions of the atmosphere had been for a few weeks preceding the breaking out of the epidemic.

Below, I give an index of the symbols used in drawing the charts, with an explanation of what each symbol is used for. The mean for the day of each instrument is used except the minimum thermometer and the rainfall. The dot placed on the blue line representing 12, M. (noon) of each day, or, whenever the line or symbol touches, or crosses, it indicates the position occupied on the scale, by the mean of the instruments for that day. The rainfall is so placed that the right hand edge of the line representing the depth of water that fell is made to represent the time at which the rain ceased to fall that day, using the blue line as a unit to represent 12, M. (noon) of each day. The arrows that mark the mean velocity of the wind are placed so that the apex of the barbed head touches on the 12, M., line, a point coinciding, with the mean velocity of wind that day on the scale."

During the epidemic, "*L'Abeille de la Nouvelle Orleans*," of August 13th, published an editorial, and also a communication upon the subject of intramural burial places, and their influence upon yellow fever spread. The papers are of such interest as to justify the insertion of the part relating to cemeteries:

"We open a subject on which little has heretofore been said, although it may occupy a prominent place in the list of infections with which we are afflicted. We speak of the old cemeteries, situated in the very heart of the city. We do not know any city in which there are so many cemeteries, or where they are so situated as to produce so much unhealthfulness, in consideration of the extraordinary number of tombs they contain, as here. Here we do not bury the dead, we simply wall them up, one upon the other, by stories, and often the odor of dead bodies escapes from them by imperceptible cracks. This is not all, these cracks often form gaping crevices, when the infection comes with all the strength decomposing human remains can cause. This is proven by the fact that at the end of three years the same

tomb, and the same division may again be used. If we open a division at the end of three years, we find a few bare bones, which we push aside to give place for other remains. Since there is such rapid decomposition, and no decomposition goes on without air, the air must penetrate these vaults. If it enters it also comes out, but loaded with infected and pest-bearing odors. The atmosphere is necessarily vitiated by them. Persons dwelling some blocks off scarcely perceive it, and fancy the odors we speak of do not exist. The fact is, one must be in the immediate neighborhood of the cemeteries to understand the unhealthfulness they cause, and even the neighbors confound the miasma from the dead with all the other odors that are so numerous."

My own attention was drawn to the surroundings of Washington cemetery in the Fourth District. I can state with confidence, that yellow fever was not more prevalent, nor of worse type, in the vicinity of that burial ground than elsewhere in the city. Furthermore, owing to an imperfection in the wall on the north side of this cemetery, the odor of decomposing bodies was disagreeably perceptible. Often when passing at night I remarked the fact, and directed my attention to a possible effect on the spread, or mortality of the disease.

While the dead bodies of those recently expired are undoubted sources of infection in yellow fever, it is not established that the effluvia of advanced decomposition have any such effect.

It seems probable that certain qualities belonging to yellow fever germs, perhaps ponderability and that unknown quality which causes it to adhere to surfaces, are sufficient to prevent atmospheric accumulations, except in close contiguity with the surface of the earth. It has been properly spoken of as a low-laying poison, creeping, as it were, near the surface of the ground. Nor do I know of any facts which substantiate a theory that other volatile materials may become entangled with yellow fever germs and serve as air borne vehicles of transportation for them, from one country to another, or through greater distances than one or two miles, if so much.

I endeavored to ascertain if exposure to night air influenced the spread, or gravity of cases of yellow fever, by comparing the cases in the day police force, with those in the night force. The result is set forth in the following letter from Chief Boylan:

OFFICE CHIEF OF POLICE,
New Orleans, Oct. 23, 1878.

S. M. BEMISS, ESQ., M. D.,
Chairman Yellow Fever Commission,
New Orleans, La.

Sir:—I have the honor to report to you the number of cases and casualties of yellow fever, during the epidemic of this year to date, among the members of the "Crescent City Police Force," as follows:

The force consisting of four hundred and seventy-five men, rank and file; and an average of fifty supernumeraries.

Day force has had twenty-four cases and two deaths.

Night force has had fifty-two cases and six deaths.

Total force: Five hundred and twenty-five.

Total cases of yellow fever: Seventy-six, or one-seventh of the force.

Total deaths from yellow fever: Eight, or one-ninth of the cases.

All of which is submitted as per request.

Yours respectfully,
THOS. N. BOYLAN,
Chief of Police.

Investigations into the influence of uncleanly habits or surroundings upon the spread of yellow fever in New Orleans are equally undecided in result. There are various reasons why it is so difficult to determine to what extent filth operated as a factor in promoting the spread of yellow fever in New Orleans. Those portions of the city which were most filthy, and the least desirable for residences, were occupied for the most part by poorer classes of whites and negroes, a large percentage of whom were protected by previous attacks.

But after admitting the full force of this disturbing cause, in efforts to arrive at truth on this point, it was dis-

heartening to the enthusiastic sanitarian, to drive along the filthy open canal in the centre of Melpomene street, and contrast the comparative exemption of that thouroughfare from sickness, with the frightful decimation which occurred in the clean and beautiful residences about the intersections of Euterpe with Carondelet and Baronne streets.

New Orleans was not in a good sanitary condition at the time the epidemic appeared, nor at any period of its prevalence. Publications were made revealing the fact, that "kitchen refuse, dead cats, dogs and fowls" were dumped in open squares in various parts of the city.

It was also shown that the earth of the pauper burial ground had become so thoroughly saturated with animal matter, that the bodies buried there were imperfectly deodorized, even when covered with the customary eighteen or twenty inches of soil, which was not always done. But from my own observation, these violations of sanitary laws, gross and outrageous as they were, exercised little appreciable influence over the spread of the fever. The localities where they were enacted, were not in populous districts of the city, and in so far as my own experience gives me opportunity to testify, they were neither so flagrant nor so frequent as the publications indicate.

Still, it is asserted, and in so far as my knowledge goes, the assertion remains uncontradicted, that "four thousand loads of kitchen garbage" had been used to fill up streets in the early part of 1878.

One of the most disagreeable and common nuisances against the senses, and probably against health, was committed daily during the whole epidemic, by street scavengers and street sprinklers. The former would drag cart loads of offensive mud from the gutters and leave it exposed in the streets, often for days or even weeks before its removal. Sprinkling unpaved streets with pure water, is of such doubtful propriety during yellow fever epidemics, that in my present uncertainty, I should forbid it, but there is a method of street sprinkling, common in every part of New Orleans, which should be positively condemned: this is, throwing

water from the open gutters over the streets, until the whole surface is so wet that the dust is prevented from rising.

The sweeping character of the epidemic in this city was strongly marked. The disease seldom appeared in a family, or eleemosynary institution without attacking all, or the great majority of unprotected persons. In our present state of knowledge it is not possible to explain this feature of the epidemic. Theoretically, we can safely assume that it must have been due either to intrinsic augmentation of the quantity of infection, or to intensification of its toxic quality, or else to some increased susceptibility or receptivity on the part of the population to the infection. The former explanation is more fully in accord with the germ theory as applied to the infection itself, and I know of no causes influencing the population to have rendered it more than ordinarily liable to disease. There were on the other hand some remarkable, and altogether inexplicable instances of exemption from attacks, not alone of individuals, but of collections of persons under the same roof, either as families or inmates of charitable asylums. Dr. W. W. Black reports having charge of the Poydras Asylum, with eighty children as inmates, besides the usual attendants. He does not mention the number protected by previous attacks, but as no general epidemic had prevailed in New Orleans since 1867, very few, if any, of the children could have had attacks of yellow fever.

The first case occurred on the 16th of August and terminated in death August 17th. The next case occurred August 23d, after which only two other cases were developed in the asylum. Dr. Black gave small doses of quinine as a prophylactic, and the strictest hygienic measures were enforced in the asylum, together with a liberal use of carbolic acid.

Another asylum for children in the city is said to have enjoyed perfect immunity from cases of yellow fever.

The first case brought to Charity Hospital was admitted July 21st. The first among the inmates of the hospital, was in the person of a patient who fell sick July 28th, and

died August 1st.* During the whole prevalence of the disease, 817 cases were treated in Charity Hospital, with 411 deaths. The mortality rate being slightly over one-half of the whole number of cases treated in this hospital. One hundred and thirty-five originated in the hospital, of which, fifty-seven were fatal, somewhat less than one-half.

This list includes two resident physicians in charge of the hospital, both of whom recovered; ten medical students as internes, one of whom died; and six Sisters of Charity, of whom three died. The following tabulated abstract of practice in the Charity Hospital is of great interest, and may be relied on as correct.

Tabulated Abstract of Practice in Yellow Fever Epidemic of 1878.

New Orleans Charity Hospital.

	Ages Under.	JULY		AUGUST		SEPT.		OCTOBER		Total.		Per cent.
		No. Treated.	No. Fatal.	No. Treated.	No. Fatal.	No. Treated.	No. Fatal.	No. Treated.	No. Fatal.	No. Treated.	No. Fatal.	
WHITE.	5			7	3	3	1			10	4	40.0
	5 to 10			2	1	1	1			3	2	66.⅔
	10 to 20	8	3	26	7	25	6	7		66	16	24.2
	20 to 40	18	9	246	141	175	91	61	24	500	265	53.0
	40 to 60	9	6	75	45	83	45	18	10	185	106	57.3
	60 to 80	2	2	7	6	5	1	1	1	15	10	66.⅔
	Total..	37	20	363	203	292	145	87	35	779	403	51.7
BLACK.	10 to 20			2		5		1		8		
	20 to 40			11	3	8	1	5	1	24	5	20.8
	40 to 60			2	1	1	1	3	1	6	3	50.0
	Total..			15	4	14	2	9	2	38	8	21.0
	Grand Total.....									817	411	50.3

* Owen Owens, age 25, native of Wales; has lived in Louisiana at various intervals during the last eight years; laborer, of intemperate habits, admitted to Ward 8, Charity Hospital, on February 26th, 1878, for necrosis of the femur, cause of which was not noted. He had previously suffered from several attacks of malarial fever. He contracted yellow fever on July 28th, 1878, in the ward to which he was admitted, as he never left it after admission, and had a well marked malignant case of the disease. He died on August 1st, with black vomit.

His was the first case of yellow fever contracted in the Charity Hospital History, that of Case 83, in the recordbook of Ward 8, Charity Hospital,

These results are far from being commendatory of treatment of yellow fever in public hospitals, and the figures representing the success of yellow fever treatment in other hospitals are not very widely different.

In the Hotel Dieu, 110 deaths occurred, number of cases not known. In Touro Infirmary, 33 deaths, number of cases not known. But these remarks are not so applicable to asylums for children as to public hospitals. In the former class of institutions, excellent results are sometimes obtained by prudent medical advisers, properly seconded by persons in charge.

Dr. Bickham treated 33 cases in the (female) Children's Home, with no death. An extract from his report is included:

"At the Children's (female) Home, on Jackson street, there were 33 cases, one elderly lady and 32 children, and no death among them. This was 1 death in 40 cases in the two institutions.

"This success (much better than I had outside) I attributed, not to any skill or special treatment, but somewhat perhaps to management, and much more to the advantages we have in such disciplined institutions. In both, they were trained to obedience, and kept quiet, if told to do so, whether they wanted to or not. Everything was systematized, beds and wards were provided beforehand, good nurses were in readiness, and as soon as one complained she was constrained to acknowledge it, put to bed, and standing directions given to intelligent persons what to do before I could get there, and in this way much was anticipated, and important time gained. There is nothing like *starting* the case well, and all of the most important part of the treatment, as far as indication is concerned, should be done in the first twelve or sixteen hours. * * *

My treatment was the simplest possible: first a mild but effective purgative early, preceded by an emetic if there were ingesta, a foot bath, a little warm drink, if the stomach would bear it, reasonable cover to invite action of the skin, judicious ventilation, sometimes a little aconite or gelseminum, with some gentle diuretic, and the horizontal position strictly maintained. The purgative was very frequently castor oil, if indicated a small mercurial preceding it, and if there were any indications of malarial complication,

quinine, but not without. When the proper time came, they were gently stimulated and carefully nourished, and if the stomach was the least deranged, some anti-emetic was given, the stomach was left alone, everything else stopped, and the patient nourished and stimulated wholly by enematæ, every three or four hours, of Valentine's Extract of Meat, combined with brandy, Ducros' Alimentary Elixir or home-made beef tea. There were some dozen very sick, and two at the "Children's Home" who threw up black vomit quite freely, but recovered. They were nourished in this way for days together, without a thing passing the lips except a teaspoonful of water or seltzer at a time. In this institution there were no cases of suppression of urine."

The following letter strongly supports the opinion advanced by Dr. Bickham:

No. 14 St. Anne street.

New Orleans, October 11th, 1878.

Gentlemen—Having noticed that your investigations will embrace the effect of location on mortality, I deem it proper to mention that out of eight and possibly more cases of yellow fever, on the front of square on St. Anne street between Levee and Chartres streets, *facing* Jackson square, none ended fatally. The ratio in that portion of the city near the French markets, is, I believe, computed to be exceptionally high. The buildings (Pontalba) in which above cases occurred, have a sunny, southern and western exposure and the open square affords excellent ventilation.

Another matter of interest (which has no doubt already attracted your attention) is the remarkably *low* ratio of mortality among the children in our various asylums afflicted by the fever, as compared with that among children at large.

It suggests the inquiry how far a *light*, *spare*, but regular diet; thorough discipline and obedience both in health and sickness; cleanliness; perfectly ventilated dormitories on upper floors, would tend to lower the death rate. The same inquiry might be extended to the reformatory institutions for adults.

Also, whether the mortality has been greater among those who slept on ground floors or among those on upper floors. The result would perhaps indicate whether the fever poison pervades the air only to a certain height and whether

absorption of the poison into the system is not greater at night than in the day, when mind and body are alive and active.

A keen interest in your researches induces me to take the liberty to address you.

With highest respect,

Your obedient servant,

C. F. W. DANKERS.

To Yellow Fever Commission of 1878.

I.—APPENDIX TO HISTORY OF YELLOW FEVER IN NEW ORLEANS.

NEW ORLEANS, October 13th, 1878.

Messrs. S. M. BEMISS, JEROME COCHRAN and E. LLOYD HOWARD,

Yellow Fever Commission:

Gentlemen—In reply to your circular letter, I submit the following report, in which the numbers of the answers correspond to your printed questions. Some of these I have, however, omitted, believing you have had access to better sources of information than those at my command.

1. Mention the date of the first case of yellow fever in your place. (Should this be unknown to you, please substitute first case in your practice.)

1st. The first case of yellow fever in my practice this summer occurred on the 19th July.

2. Mention those facts which account for the sickness of the first case.

2d. There was a case of fever within two squares of the residence of my patient at or about the time he took sick. Twice daily he passed through an infected portion of the city (going down Magazine street from Philip to Poydras), walking to and from his place of business.

3. Give dates of attacks of cases immediately following the first case or cases.

3d. July 30th—August 2d—August 5th.

4. State what connection, if any, existed between the second group of cases and the first case or cases, either as respects locality or personal contact.

4th. No connection whatever between cases of July 19th and July 30th. Case of July 30th occurred on Magazine street, between Toledano street and Louisiana avenue. Case of August 5th, on Louisiana avenue, corner of Laurel street, a distance of about three squares from the former.

Case of August 2d had no connection with any of those summarily mentioned above. I learned that there were cases of yellow fever in the immediate vicinity of the house in which my patient of August 2d lived.

(This case was on Annunciation street, between St. Andrew and St. Mary streets.)

No answers returned to questions numbered from 5 to 14 inclusively, for the general reason given higher up.

15. What measures of disinfection were practised as it respects localities, houses, furniture or clothing?

15th. In an asylum which I attend, I caused carbolic acid to be freely and repeatedly used in the buildings, outhouses, sinks, etc. I mention this asylum only, because I know that in the institution (St. Joseph Asylum, corner Laurel and Josephine streets) disinfection was thoroughly attended to. I recommended disinfection in a number of private families, but have doubts as to the manner in which it was carried out.

16. What is your appreciation of the attempts at disinfection you have described?

16th. In the St. Joseph Asylum, there are 200 orphans and 28 sisters and servants. It is impossible to state how many of the children may have had yellow fever. Among the sisters and attendants, only *seven* had had the fever in previous years.

Yellow fever broke out in the asylum on the 18th August. From that date to this (October 13th, 1878), there have been 23 cases of yellow fever in the house; three among the sisters, the remainder among the children.

17. What measures of personal prophylaxis were resorted to, either by medical advice or through a popular belief in the efficacy of certain agents or measures?

17th. At my request, before the fever made its appearance in the asylum, the sisters began giving sulphate of quinine twice daily to all the inmates, in doses ranging from *one* to *three* grains, according to the age of each individual, but after the first few cases had occurred, they became discouraged, and gave up its use.

18. What is your estimate of the efficiency of the plan or plans described?

18th. The facts under Nos. 16 and 17 are submitted without comment.

No answer returned to question 19, for the general reason given above.

20. Mention any features or charactoristics of present epidemic not observed in previous visitations of yellow fever.

20th. Although perhaps not pertinent to the question, I will reply that I have had several cases of recovery from black vomit, one in an adult, the remainder in children. I have also noticed frequently (and that, generally, in mild cases) a rubeolar or vesicular eruption. It has appeared to me, that I have met with fewer instances of black vomit, in proportion to the number of cases this summer, than in previous visitations (1870–'73–'76). The principal immediate causes of death were such as to produce congestion, chiefly of the brain and kidneys.

21. Mention any striking differences in degrees of resistance to yellow fever poison, by different races or individuals.

21st. Of the 270 cases forming the subject of this report, 266 were among the white race; *three* of my patients were blacks, and *one* was a mulatto.

22. Mention any instances of second or third attacks, with dates of prior attacks.

22d. Several of my patients assured me that they had had yellow fever in former years, giving particulars, and the name of the physicians who had attended them. This seemed to be particularly the case with those patients who asserted that they had had the fever during the epidemic of 1867.

23. Mention any instances of *genuine relapse*, using the term in its strict medical sense.

23d. I have seen no case of *genuine relapse*, "using the term in its strictly medical sense."

Tabulated Abstract of Practice in Yellow Fever Epidemic of 1878.

		JULY		AUGUST		SEPTEMBER		OCTOBER	
	Ages Under	No. Treated	No. Fatal	No. Treated	No. Fatal	No. Treated	No. Fatal	No. Treated	No. Fatal
WHITE.	5			20	2	47	4	10	1
	5 to 10	1		9		38	2	20	2
	10 to 20			11	2	31	1	20	2
	20 to 40	1		7	1	34	1	6	2
	40 to 60			3		5	1	3	1
	Totals..	2		50	5	155	9	59	8
BLACK.	Under 5								
	5 to 10			1		2			
	10 to 20								
	20 to 40								
	40 to 60								
	Totals			1		2			
MULATTOES.	Under 5								
	5 to 10								
	10 to 20					1		2	
	20 to 40								
	40 to 60								
	Totals .					1		2	

Total cases reported to Board of Health to date of this reply (October 13th, 1878)..... 270

Total deaths to date (October 13th, 1878)..... 22

Death rate.....0.081, say $\frac{8}{100}$.

REMARKS AND EXPLANATIONS.

Having had my attention called to a statement made in the daily papers, that it was believed that more cases of fever had occurred this summer in the streets running from the swamp to the river than in those whose direction is parallel to that of the Mississippi, I analyzed the location of the 270 cases included in this report, with the following result:

Number of cases in streets running from swamp to river	181
Number of cases in streets parallel to Mississippi	89
	270

In explanation of the above it has been suggested that the greater number of cases in the cross streets may be due to the fact that malarial poison by following the gutters, may be at greater liberty to creep along the cross streets, advancing in a direct line from the swamp towards the river, whilst the smaller number of cases in the parallel streets may indicate, that owing to the angle at street corners, only portions of the main current of poison leaves the gutters of the cross streets, whence a lesser degree of poisoning of the parallel streets.

With regard to this point no comment is made, save that I have been interested in reading a paper with which you are doubtless familiar. I refer to anaccount of the Savannah epidemic of 1876, published by Dr. Le Hardy, in the Transactions of the Georgia State Medical Association for 1878.

In the controversy and investigation now pending, concerning the Department of Improvements of the City of New Orleans, with reference to the condition of the streets, hauling and dumping of garbage, etc., I see it is stated in the papers that the Administrator of Improvements donated 400 loads of garbage, which were used to fill the grounds of the St. Alphonsus Orphan Asylum, situated on St. Patrick street between Fourth and Washington streets. This Asylum is located immediately opposite a cemetery and is within a square of another large grave yard. I have been the physician of the Institution since its foundation, over two years since. It has a population, on an average, of about one hundred orphans.

Whilst wishing to avoid being drawn into the controversy now pending as stated above, I must say that the St. Alphonsus Asylum has given me but little employment professionally. Although situated far back of town I do not remember ever having treated a case of malarial fever within its limits, and this, although for a long time the grounds were low and badly drained, which defects have been partly remedied in the last year. This summer too, yellow fever did not make its appearance in the Asylum until the 20th September, when the first case occurred; from that time, to the date of the present writing, only four (4) cases have been observed at this Institution.

In common with all other physicians, I have been struck with the ravages of the disease among young people and children this summer. I have compiled the following table from my notes on the subject:

Cases to age of sixteen years inclusively	males,....	91
	females ..	95
Cases from seventeen years and upwards	males,....	36
	females ..	48
		270 cases.

Females appear more liable to the desease than males, thus:

Total number of females attacked in my practice	144
Total number of males attacked in my practice	126
	270

This epidemic has afforded me additional proof of the fallacy of the once popular notion (to which portions of our old Creole population still cling), that children born here are not liable to yellow fever. The experience of this summer, added to that already gained in the past, has convinced me that with regard to yellow fever, there is no safety, save in having had the disease, and that even this may not be absolute. Fancied security, based upon locality of birth, or long residence, has vanished before the stern reality of facts.

Of the 22 deaths reported above, there were,	females	12
" " "	males	10
		22

This may be connected with the statement made higher, that the greater number of cases in my practice occurred in females.

I have studied the epidemic at the St. Joseph Asylum (under my charge), with a view of ascertaining whether or not the height of sleeping apartments above the ground played any part in the production of the disease. I obtained completely negative results as far as any proof was concerned that it is more dangerous to sleep near the soil. Thus, I observed 23 cases at the asylum:

	Second floor.	Third floor.
	10 cases.	13 cases.
I had, among the sisters		3 cases.
" " girls		6 cases.
" " boys		14 cases.

The sisters slept on the second floor, and the dormitories of the children were situated on the second and third floors. I was unable to account for the greater number of cases among the boys.

The treatment pursued was generally the following, although, of course, special indications called for special measures of relief. A mercurial purgative, when my action had not been anticipated by the friends, or supplemented by some other agent. Usually, a footbath was given.

I attached very little importance to hot drinks, employing, instead, seltzer water and ice freely. I took care not to cover my patients immoderately, and ventilated freely. Heat and dryness of skin were treated by frequent lotions with cool water, to which alcohol was added. For the same purpose, cool injections were also frequently used. I very often give a mixture with bromide of potassium and tincture of gelseminum, administering the latter boldly. The bromide appears to have an excellent sedative effect upon the nervous system, and to lessen irritability of the stomach. The gelseminum I regard as an efficient indirect diuretic. This year, and in former epidemics, I have used digitalis, aconite and veratrum viride; I prefer the gelseminum to all these. I fear the veratrum, *for it vomits*, even in small doses. It is undoubtedly the best of the series for rapidly bringing down the pulse, but I never found it of much avail in reducing the temperature, and the advantages of bringing down the pulse without corresponding lowering of the temperature, I considered as problematical, in view of the gastric disturbance I often saw it occasion.

I used but little quinine, and that only when cases were seen at the outset. I did not observe any good effects from it, on the contrary, I gave it up, because I thought it too apt to irritate the stomach. I respected the stomach to the best of my ability. Black vomit, present or threatening, was treated by blistering, effervescent draughts, ice, champagne, etc., etc. Once I tried ergot, hypodermically; I obtained no result. Congestion of the kidneys, and suppression of urine, were dealt with by the means familiar to all. Stimulants and nourishment were given as occasion suggested.

On an average, the temperature, at the outset, in my cases ranged between 103° and 104°. In the case of a child, at the St. Elizabeth Asylum, the temperature, soon after the breaking out of the fever, was 106¾°. By judiciously cooling the patient, it was brought down to 102½° in a few hours. Another of my patients at the St. Elizabeth Asylum, had a temperature of 108¾°, about two hours before her death. This was the highest temperature I observed during the present epidemic.

I remain, with great respect,

THOMAS LAYTON, M. D.

SUPPLEMENT.

Since this report was begun, I have had 16 new cases, and four more deaths have occurred in my practice. These furnish the following totals:

Cases, 286; deaths, 26; making the death rate, 0.090, or nine per cent.

Of the 16 new cases, 14 were white persons and 2 mulattoes.

Of the 16 new cases, 13 occurred on cross streets, and 3 on streets parallel to the river.

Of the 16 new patients, 11 were females and 5 males.

Among the four new deaths mentioned in this supplement, 3 were those of males.

With reference to their ages, the 16 new patients and the 4 deaths additional, rank as follows:

YEARS.	PATIENTS.	DEATHS.
Under 5	4	1
5 to 10	3	2
10 to 20	5	
20 to 40	2	1
40 to 60	2	
Total	16	4

Respectfully,

THOMAS LAYTON, M. D.

October 16, 1878.

NEW ORLEANS, November 7th, 1878.

ROBERT D. MURRAY, ESQ.,

Secretary of the Yellow Fever Commission.

Dear Sir:—In reply to your communication of the 31st ult. (not received however, until yesterday), asking for a special table concerning the cases of yellow fever which I treated at the St. Joseph Asylum, at the St. Elizabeth Asylum and at the St. Alphonsus Asylum, I have the honor to submit the following report:

ST. JOSEPH ASYLUM.

35 Cases: 31 Children and 4 Sisters. 6 Deaths.

AGES UNDER.	AUGUST.		SEPTEMBER.		OCTOBER.		TOTAL.	
	Cases.	Deaths.	Cases	Deaths.	Cases	Deaths.	Cases.	Deaths.
5	1		1	1	2		4	1
5 to 10			8		13	2	21	2
10 to 20	2	1	3		1		6	1
20 to 40					2	1	2	1
40 to 60			2	1			2	1
Total	3	1	14	2	18	3	35	6

Death rate 0.171 or $10\frac{71}{100}$ per cent.

I respectfully refer you to my general report for details concerning yellow fever in this Asylum.

I will add, however, that of the 35 cases, 16 slept upon the second floor and 19 on the third floor.

Of the 31 children who had the fever, 9 were girls and 22 boys. I was at at loss to ascertain why the boys appeared to be singled out rather than the girls. The only reason which *may* point to an explanation lies in the

fact, that among the sisters who attended to the healthy girls, *none* had access to the sick; but *one* of the sisters who had charge of the *healthy* boys was also employed in watching the *sick*, from whom she would return to the *well*, without changing her clothing. This fact is submitted without comment.

St. Elizabeth Asylum.

I am not the regular physician of this institution, but I was requested to visit yellow fever patients there, during the illness of the titulary physician, Dr. Shepard, who was himself taken with the disease.

I am not acquainted with the date of appearance or origin of the fever in this establishment, nor do I know the total number of cases. I am, however, aware of the fact that there were cases in the house before I was called in, and that more occurred after I had turned the orphanage over to Dr. Shepard, upon his recovery. I can, therefore, only furnish data as to what took place whilst I visited the asylum. I had under my care 15 cases and lost 1 patient.

Ages.	SEPTEMBER.		OCTOBER.		TOTAL.	
	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.
10 to 20			13	1	13	1
20 to 40	2				2	
Total.....	2		13	1	15	1

Death rate, 0.066, or $\frac{66}{1000}$ or 6 $\frac{6}{10}$ per cent.

St. Alphonsus Asylum.

4 cases: 1 sister and three children. One death.

I refer to my general report for the health of this institution, and the filling of its grounds with garbage taken from the city dump.

We had no yellow fever until the 20th Sept., and our first case was a child who had been brought to the house only a few days before by the Howard Association. At the time of its admission, it was already unwell, and both of its parents had recently died of yellow fever in the city.

Ages Under.	SEPTEMBER.		OCTOBER.		TOTAL.	
	Cases.	Deaths	Cases.	Deaths.	Cases.	Deaths.
5	1		1		2	
5 to 10	1			1	1	1
10 to 20			1		1	
Total.....	2		2	1	4	1

Death rate, 0.25 or $\frac{1}{4}$.

I remain, with great respect,

Thomas Layton, M. D.

II.—APPENDIX TO HISTORY OF YELLOW FEVER IN NEW ORLEANS.

Testimony of Dr. J. P. Davidson, of New Orleans, on Yellow Fever.

Question 1. What is your profession?

1. A practitioner of medicine.

Ques. 2. How many years have you practiced medicine.

2. I have practised medicine from 1832 to the present time—forty-six years.

Ques. 3. How long in New Orleans?

3. From 1832 to 1837, and subsequently from 1865 to the present time —1879.

Ques. 4. How many epidemics of yellow fever have you witnessed in New Orleans.

4. The epidemic of 1831, 1832, 1835 and 1837. 1867 and 1878.

Ques. 5. How many epidemics have you witnessed in other places?

5. 1847, 1853, 1855, and 1858, in the town of Alexandria, parish of Rapides, La.

Ques. 6. What marked difference have you observed in various epidemics, either in New Orleans or elsewhere? State date and locality of epidemic in connection with any report of differences in various epidemics, which you may think proper to make.

6. In the earlier epidemics witnessed by me, both as an interne of the Charity Hospital, and subsequently, while a practitioner, the type of the fever was of an inflammatory character, as contra-distinguished from the adynamic and conjestive form of later epidemics, notably of the epidemic of 1867 and 1878. In the town of Alexandria, the epidemics of 1847, 1853, 1855 and 1858, were characterized by cerebral inflammation, and hemorrhages, and were very fatal, more particularly those of 1853, 1855 and 1858. In the two last the negroes on the plantations suffered quite as much as the whites, an unusual occurrence in that race, and the mortality was relatively as great amongst them. I think a larger proportion of blacks suffered with hemorrhages than among the whites.

Ques. 7. What are your facts or opinions respecting the origin of each of the various epidemics you have passed through?

State explicitly facts or opinions, which determine whether any of the epidemics were due to importation, and whether in any, the poison originated *de novo*, or after protection and survival through the preceding winter?

Also classify the various epidemics you have witnessed, in respect to origin.

7. The epidemic of 1831 was occasioned by the influx of citizens of Mexico—expelled from that country on the invasion of an army under General Baradas—the last effort on the part of Spain to recover authority over the colony. These expelled royalists reached New Orleans from Vera

Cruz, where the vomito was prevailing at the time of their banishment. The epidemic began in the month of September and was very fatal and malignant.

Without having any recorded facts before me to which I can refer, my impression is pretty clear that almost every epidemic was traceable to importation.

It is certain that sporadic cases of yellow fever have occurred annually in New Orleans, and doubtless due to to the survival of the special cause of the disease. Under a particular constitution of the atmosphere, arising from a combination of influences, presumed to be "barometric pressure; moisture, elevated solar heat, maintained for a long period, high dew point, or certain electric condition and deficiency of ozone," together with the greatly neglected sanitary condition of the city—it is very probable that the germs of yellow fever surviving the winter, may give rise to an epidemical prevalence of the disease. My belief is, however, that notwithstanding the preservation of the special cause, as above stated, importation of cases of fever tend more certainly to develop an epidemical influence.

In the history of yellow fever epidemics from the earliest days, it has been remarked, that a certain epidemical influence in the air, however produced, aids the propagation of the special cause of the disease when introduced into it, while it is certain that all the factors previously mentioned as combining to favor an epidemic, will not of themselves, produce yellow fever, if the special cause be absent. This fact will doubtless account for the escape of many places in all epidemical years, when cases of fever have been introduced there without its spreading. Thus I have known the fever to prevail epidemically in Alexandria, when other neighboring towns escaped.

In all the epidemics witnessed by me in Alexandria, they could be traced directly to importation from New Orleans, usually by persons and families arriving by steamboats.

Ques. 8. What do you consider the best method to be adopted for prevention of yellow fever epidemics in the future?

8. As applied to the city of New Orleans,—more particularly—sanitary improvements thoroughly carried out in every essential; drainage; flushing the gutters daily with river water; cremation of all decomposing animal and vegetable matter; distribution of pure, filtered water; dispensing with the present system of water closets; and a quarantine so administered, as to exclude any new importation of the disease.

Ques. 9. Give as briefly as possible, your opinion respecting quarantine; considering especially its efficiency as a barrier against yellow fever, if perfectly executed, and the feasibility of securing its workings so as to result in success.

9. I have always doubted the feasibility of quarantining yellow fever, by the system heretofore in practice, if indeed a perfect barrier can be devised, so as to prevent the introduction of the disease. I am in favor of

a system of general quarantine laws, enacted by the general government, so as to make quarantine as strict and efficient as possible on the part of all ports into which yellow fever is liable to be imported. The test as to the possibility of excluding yellow fever should be made and to determine whether or not New Orleans has become a habitaut of the disease.

Ques. 10. Mention any other points relating to cause, origin, spread and prevention of yellow fever not included in above.

10. To my mind, nothing seems more important than to ascertain the atmospheric condition absolutely necessary to propagate yellow fever when its special cause is introduced; and how far, if ascertained, these conditions may be modified. Unquestionably, the sanitary condition of a city or town has very much to do with creating the prerequisites of an epidemic. The condition of Shreveport was peculiarly favorable for the propagation of the special cause in 1873. And so was that of Memphis in the same year; while in 1853, notwithstanding the introduction of a large nnmber of cases through refugees from New Orleans, no epidemic ensued. In both Shreveport and Memphis, in 1873, the epidemic was occasioned by the introduction of only one or two persons ill with the fever.

Improved sanitary condition, doubtless, mainly preserved Mobile from an epidemic last summer, notwithstanding the occurrence of quite a number of sporadic cases. To what cause other than the want of an epidemical atmospheric constitution can we ascribe the escape of New Orleans, in 1870, '71, '72, '73, '74, '75 and '76, in all of which a number of sporadic cases occnrred without the disease spreading and becoming general?

The fever in 1873 was due, in my opinion, to importation on board of the brig Valparaiso, in the immediate neighborhood of which I attended five cases. There were, as well as I can remember, at least 250 cases in a small area near where the Valparaiso was moored, and yet no epidemic ensued.

The chambermaid on board the steamboat Bryerly sickened with yellow fever on the way up to Shreveport, was landed and taken to Drs. Allen & Fenner's private hospital, where she died either the same day or the day afterwards. This was before the outbreak of the epidemic of 1873, and her case, I think, may be traced to the focus of the fever near the Valparaiso. Mrs. Gen'l Hodges was a passenger on the Bryerly, and frequently visited and attended to the wants of the chambermaid. Landing at Shreveport, she did not linger there any time, but proceeded to her residence, some eight or ten miles from Shreveport. She sickened a day or two afterwards and died of black vomit. Her son, who nursed her, shortly afterwards died also of yellow fever.

The epidemic of 1878 has been ascribed to the cases of Elliott and Clarke, brought to New Orleans sick on board of the Emily B. Souder. This may or may not be correct, but why disregard the fact that repeated cargoes from vessels arriving from infected ports were discharged, on the

levee opposite the Fourth District. This part of the levee, it is well known, is the favorite afternoon promenade of a great number of children, their nurses and other persons, and particularly of a Sunday afternoon. It is true the vessels and cargoes had undergone disinfection at the Quarantine station, but can we feel assured that all infection was done away with?

The proximity of the street on which the first cases appeared to the levee, where steamers plying between this port and Havana discharge their cargoes, and the frequent visits of the residents of that quarter of the city to that portion of the levee may well lead one to presume the possibility of transmission through fomites. In carrying out a system of strict quarantine for the future, the removal of cargoes of vessels from infected ports and exposing them to free ventilation, after having been thoroughly disinfected on board ship, strikes me as a precaution of the utmost necessity.

REPORT

—UPON—

YELLOW FEVER IN LOUISIANA

In 1878 and Subsequently.

By S. M. BEMISS, M. D.

Part II.

For the purpose of reducing the second part of this report to such a compass that its publication may be completed in the September issue of the New Orleans Medical and Surgical Journal, I have prepared the following table showing the various points at which yellow fever occurred in Louisiana after its first appearance in New Orleans.

The localities are arranged in such sequence as to correspond with the chronological occurrence of the first cases at each place.

This table is only approximatively correct. Its errors principally relate to the reported number of cases and the number of deaths. These are more often under-stated than otherwise, because the reports were frequently sent in before the close of the epidemic.

The mortality rate has been computed for each place where the number of cases and number of deaths have been given. If the reader will disregard the decimals and read the whole numbers as representing the number of

deaths for every 10,000 cases, it will facilitate a comparison of the mortality rates in different places:

Names of Places.	First Case.	Number of Cases.	Number of Deaths.	Mortality Rate.
Port Eads	July 27	64	13	20.30
Thibodeaux	" 30	750	65	8.66
Plaquemine	Aug. 1	1159	125	10.78
Baton Rouge	" 10	2500	200	8.00
Delhi	" 11	164	34	20.73
Griffin's, near Summit,	" 13			
Paincourtville	" 14	181	20	15.47
Labadieville	" 16	160	24	14.70
Donaldsonville	" 17	498	71	14.45
Morgan City	" 17	586	109	18.73
Pilot Town	" 18	113	17	15.04
Allemands Station	" 20	32	17	53.12
Napoleonville	" 20	80	8	10.00
St. Bernard	" 25	19	7	36 84
Delta	" 27	87	47	54.02
Tangipahoa	Sept. 1	150	50	33.33
Buras Settlement	" 3	14	3	21.42
Lagonda and vicinity.	" 5	591	42	7.10
Port Hudson	" 9	100	11	11.00
Teche Country	" 10	715	81	11.33
Lafourche	" 12	209	26	12.44
Luling Station	" 15			
Pattersonville	" 16		75	
Hammond	" 18		5	
Jesuit's Bend	" 22	2	2	100.00
Clinton	" 23	96	15	15.62
Berwick City	" 27		7	
Ponchatoula	Oct. 6	12	3	25.00
Houma	" ..			
Bayou Cypre Mort	Nov. ..		7	

The following extracts from the body of the report are thought to be too important to be omitted from the abstract published:

Thibodeaux.

The town of Thibodeaux is situated upon the Bayou Lafourche in the interior of Louisiana, and contains a population of about 2800. A large proportion of the inhabitants are what we may call "acclimated" persons, and there is amongst them a large element of the French Creole. The population is mainly a fixed one, and there were, during the summer, but a small number of refugees

from New Orleans and other infected places; whilst comparatively few of the inhabitants of Thibodeaux fled to avoid the contagion.

There was established, and enforced,—up to the period when it was found the fever had obtained a firm footing in Thibodeaux,—a nominal quarantine. But this was, like most of the inland quarantines during the recent epidemic, very ineffective and of little or no value.

Beyond these facts the town was not specially interesting, presenting no special features as compared with similar towns in this region of country, with this notable exception: that in Thibodeaux the town was placed, by the 1st of July, in excellent sanitary condition. It is a local law that each spring all gutters, ditches, streets, privies, etc., be cleaned, and that after June 15th no earth shall be "turned up" nor spaded until the autumn. This year especially was this attended to, so that the authorities claim that by the 1st July there was not a cleaner town in the United States. Whilst I cannot endorse this statement, yet I can say that from my observation in November the town was unusually clean.

As to the first case of yellow fever in the town, there is some difference of opinion. Yet I think it has been very clearly established that the first case occurred at the Convent, situated just upon the borders of the town.

Sisters Augustine, Ignatia and Valerie came from New Orleans to the Convent on the 29th July.

On the 30th July, Sister Ignatia had an attack of yellow fever, from which, after a severe sickness, she recovered.

The second case seems to have been that of Mr. Marange, on Jackson street near Crazy. Mr. Marange was one of the quarantine guard, and had been, for ten days or two weeks, in the habit of boarding all trains of cars coming from New Orleans. He was taken sick on the 8th of August, and died in a few days, with a well marked case of yellow fever, but no black vomit.

In from 10 to 15 days after Mr. Marange's death there occurred nine (9) other cases in his house.

The third case was Sister Germaine, in the Convent, on the 17th August. She recovered.

The fourth case was that of Miss Martin, a novice in the Convent. She was taken sick on the 18th August and died on the 23d August.

The fifth case was that of Sister Faustine, in the Convent. She was taken sick Aug. 26th and died Aug. 30th.

The next case I record was that of John McCulla, a gardener, who lived within 25 yards of the Convent. There is reason to believe he was employed at work in the Convent garden. He was taken sick August 26th and recovered.

On August 31st, a child,—Suz. Knoblock,—living within 50 yards of the Convent, and who was accustomed to play near the Convent grounds, almost under the windows of the Convent, was attacked, and after his case it spread through that family and their kindred, to the extent of 15 or 20 cases.

By this time the disease was beginning to become epidemic over the city and was quite severe. Out of a population of 2800 there had been 750 cases, with 65 deaths, up to the date of my visit, November 14th.

E. Lloyd Howard, M. D.,
Member Yellow Fever Commission.

Plaquemine.

The town of Plaquemine, situated upon the west bank of the Mississippi river, in Louisiana, containing a population of about 1500, differs in no essential particular as to drainage, cleanliness, etc., from the other towns of this section of the country. The drainage is naturally good, being from the river to the bayou and swamps in the rear.

During the months of June and July, there had been a considerable number of cases of malarial fever, which usually abound at this season of the year.

At the date of my visit, Nov. 8th, 1878, the number of cases of yellow fever had been estimated at from 700 to

800, with about 120 deaths. There being no Health Board, nor system of registration, for the town, these figures are approximative only. There had been no enforcement of quarantine.

The first case of yellow fever in Plaquemine, according to the best testimony I could obtain, was in the person of Mrs. P., wife of one of the leading physicians of the town, and occurred August 1st. Mrs. L., a sister of Mrs. P., had come to reside in the house, July 10th, direct from New Orleans. On the 21st July, the husband of Mrs. L. arrived from New Orleans, reporting yellow fever as existing in his family in that city; he brought no baggage, and remained but two hours, returning to New Orleans. On the 27th July, Mrs. L. received from New Orleans a box, containing ladies' lingerie (having been purchased from, and shipped by "Jamison, Canal street, N. O."). This box was opened by Mrs. L. and Mrs. P., on the day of its arrival, July 27th. On the 1st of August, Mrs. P. was attacked by yellow fever, and, after a severe sickness, recovered.

About Aug. 5th and 6th, three of Dr. P.'s children were taken sick with the fever, and, subsequently, during the following six weeks, the other—six—children of the Doctor's were atttacked. None of these cases proved fatal; the family were natives of the place.

On the 11th Aug., Keller, a mulatto boy, 3 years of age, residing more than half a mile distant from Dr. P.'s house (see map), was taken sick, and died Aug. 16th, with black vomit. This boy was the son of the laundress of Dr. P.'s family, and had been accustomed to accompany his mother in her visits to the house.

The dwelling house of Dr. P., Church street, between Court and Plaquemine, is one of the largest and best of the town. It is situated in the highest and best drained portion of the town, having ample grounds and garden surrounding it, and is clean and well kept (see map).

On the 20th July, Mrs. Roche, wife of the postmaster, residing directly opposite to Dr. P. (see map), received

from " F. Newhall, 40 Camp street, New Orleans," a box, containing window shades, with cords, tassels, etc., and, on the same day, opened it, being assisted by Miss Ritter, who resided with her. On the 1st of August, Miss Ritter was attacked by yellow fever, and, after a severe illness, recovered. On the 4th Aug., Mrs. Ritter, residing in the same house, was taken sick, and died Aug. 11th, having had no black vomit, but copious black stools.

On the same day, Aug. 4th, and in Mr. Roche's house, Miss Bowman was taken sick. She recovered.

In the same house, on Aug. 12th, Mr. Ritter was attacked. He died Aug. 18th.

At the same place, between the 12th and 18th August, Mr. and Mrs. Roche, and four children, were taken sick. Mrs. Roche died, with black vomit, the others recovered. All of these cases at Mr. Roche's residence were of white people. The house is large, clean and well kept, and no local cause could be discovered by which to account for the sickness.

On the 16th of Aug., Miss Lena S., aged 18 years, who resided in the neighborhood of the above-mentioned families, at the " Ladies' Seminary" (see map), and who had been a frequent visitor to the sick of Dr. P.'s family, was attattacked, and died Aug. 28th.

At the same place, " Seminary," on 18th Aug., Edna Schlager, 4 years old, was taken sick. She died. In the two subsequent weeks, two other cases occurred at the " Seminary;" one of which, an infant, terminated fatally.

On the 18th Aug., two sons of Major Landry, residing on Church street, between Court and Marion (see map), were taken sick. Both of them recovered. During the following two weeks, the Major himself and two daughters were attacked. Major Landry died; the daughters recovered.

On the 15th Aug., Miss Carrie Schwing, daughter of Dr. Schwing, one of the most prominent physicians of the town, whose residence adjoined that of Dr. P. (see map), was taken sick. Miss Schwing had been constantly

visiting the sick at Dr. P.'s house. She recovered, but, subsequently, there were eleven other cases in the same house, of which two, children of the Doctor, terminated fatally.

On the 8th Aug., Miss Clement, corner Constitution and Plaquemine streets (see map), was taken sick. She recovered, but there were subsequently six cases in the house.

From the middle of August the disease spread, until there was scarcely a house in the town exempt from its visitation.

I have caused to be entered upon the accompanying map the earlier cases, and it will show at a glance the several points herein indicated. I have notes of a number of other cases occurring in this town, but they possess no features of any special interest, and I believe it best to confine myself in this report to the earlier cases, and not obscure them by numbers.

It will be seen that the fever began and first spread in the very best drained and built portion of the town, and amongst some of its best citizens. That in each of the earlier cases there had been communication with infected places, persons or articles, is a fact that impresses itself very forcibly.

The facts here submitted have been carefully verified, as far as my limited time would permit, and, I believe, any deductions based upon them will be well founded.

E. Lloyd Howard, M. D.,
Member Yellow Fever Commission.

Baton Rouge.

Baton Rouge, in the parish of East Baton Rouge, is situated on the east bank of the Mississippi. The sanitary surroundings are generally good, with the exception of some low grounds in the vicinity, which are, at times, subject to overflow, and a cause of malarial diseases.

The drainage of the town is partly towards the levee

and partly towards the bayous and swamps in the rear, and is not so good as the general advantages of location would seem to invite.

In other respects the sanitary features of Baton Rouge do not materially differ from those of other towns in this section of the country.

In May last, the drains and streets were well cleaned and put in order.

As soon as yellow fever was declared to be in New Orleans, a "*nominal*" quarantine was declared in Baton Rouge; but, from all the evidence, it appears to have been of no effectiveness whatever, and, as will be seen shortly, every principle of quarantine was openly violated.

On the 5th of August, the Democratic State Convention was permitted to assemble in the town, consisting of some four or five hundred delegates and their friends. These were, for several days, scattered throughout the town, chiefly at the hotels and restaurants. Amongst them were a large number from New Orleans, and it is the opinion of all the medical men of Baton Rouge, from the presence of the members of this Convention the first cases of yellow fever in Baton Rouge originated.

The first case of clearly marked yellow fever was, admittedly, in the person of Mr. Voivodich, who resided on Lafayette street, three doors south of Main street (See map).

Mr. Voivodich is a Pole of the age of 36 years. He has been living in this section of the country for the past seven years. He was the proprietor of a restaurant and hotel, and entertained delegates to the Convention, amongst them a number from New Orleans. The Convention assembled August 5th. On the 10th day of August, Mr. Voivodich was attacked by a clearly marked case of yellow fever, and only recovered after a severe illness of 20 days.

On the 24th of August, a brother of Mr. Voivodich, aged about 25 years, and who was associated with him in the business of the restaurant, was taken severely ill with

a well pronounced case of yellow fever, and died August 29th, with black vomit.

On the premises, at the date of the sickness of these two brothers, there were employed but two persons, a white girl, who acted as chambermaid, etc., and a colored porter. The girl was taken sick with yellow fever about the 4th September, and the colored porter "shortly after" the illness of Mr. Voivodich. Both of these recovered. The premises of the Voivodichs were in good sanitary condition. Mr. Voivodich had been accustomed, for several weeks prior to the meeting of the Convention, to board steamboats in the pursuit of his business.

On the 13th of August, Mrs. Dr. Curry, who resided on Lafayette street, about half a block north of Voivodich, and on the opposite side of the street, was taken sick, with a clearly marked case of yellow fever, and died August 18th with black vomit (See map).

On the 20th of August the children of Dr. Curry, (five in number, of whom the eldest was 17 years of age), were sent to the country, five miles from town. Dr. Curry remained at home and had an attack of yellow fever on the 22d of August, recovering after a severe illness.

During Dr. Curry's illness, his eldest son, aged 17 years, came back from the country, August 27th, to nurse his father, and was attacked by the fever in *one hour* after reaching his father's house. After quite a severe illness he recovered.

A second child of Dr. Curry—one of those sent to the country—was taken sick "shortly" after reaching the country and died with yellow fever. The other children, as well as the family with whom they boarded in the country, escaped sickness.

Dr. Curry, and all his family, had but recently come into Louisiana, having moved there from Indiana six months previously.

It should be stated, that Mrs. Curry, had been in the almost daily habit of visiting a sister, living one block

south of Voivodich's, and in doing so, she passed directly past Voivodich's door, going and returning.

From this time on, the fever spread regularly along Lafayette street, from the central point of Voivodich's house, and hardly two houses in this locality escaped its visitation. In the Blind Asylum, located in the old Harney House, situated almost opposite to Dr. Curry's house, and within less than half a block from Voivodich, there occurred 12 cases, with 2 deaths, both of the latter being unacclimated persons.

For about three weeks—with the exception of those above recorded—the cases were confined to the region just described, and the disease appeared to spread slowly, but steadily. About that time, however, cases began occurring throughout other sections of the town, until finally it was all involved.

It is a noticeable fact, however, that the parts of the town in the worst sanitary condition, Catfish and Goose Hollow, etc., were the last to become infected, and did not appear to suffer more than the more prosperous portions of the town.

There were a number of interesting facts in connection with the spread of the disease in Baton Rouge.

At the United States Barracks, a guard of four men was left on the removal of the troops at the approach of yellow fever. All four of the soldiers composing this guard were attacked by the disease, and three of them died.

The population of Baton Rouge is mainly a fixed one. There were but few refugees from New Orleans or other places in the town, and but few of the inhabitants left the town during, or prior to, the epidemic. Most of them had been long residents of the place.

The building of the Louisiana State University, situated within the town, and containing within its walls a population of 36, at an early period established a strict quarantine against the town, and enjoyed a remarkable immunity,

the few cases of sickness being apparently traceable to imperfect quarantine.

Prof. Stevens was taken sick in the institution on the 31st of August. The disease was supposed to have been contracted in a visit to the town. The professor's room was closely quarantined, aud on his recovery, his room and effects were kept in constant quarantine.

There was no other case in the institution until October 22d, when Sims Jackson, a mulatto, was attacked. Jackson was the porter of the institution and constantly visited the various sections of the town on errands. He died after a few days illness.

After his death, his wife and three deaf mutes were attacked; his wife was sent from the building on the second day of her sickness, and the mutes placed in strict quarantine. These mutes had been in the constant habit of sitting by the kitchen fire, and were thus in close communication with Jackson and his wife. There had been no further cases in the buildings up to November 6th.

In the town of Baton Rouge there were reported, up to November 6th, 1878:

Total number of cases.....	2,435.
Total number of deaths	157

The Health Officer expressed the opinion that at least 500 additional cases to those reported had occurred.

E. Lloyd Howard, M. D.
Member Yellow Fever Commission.

Yellow Fever in Delhi, La.

(*Abstract of John W. James' Report.*)

This village is situated on the railroad leading from Vicksburg to Monroe, about fifty miles west of Vicksburg. It has a population of about 100 persons.

Yellow fever was brought to Delhi by a mechanic, who was in Vicksburg some days after the disease had appeared there, and boarded at a house near the portion of the town first infected.

He was taken sick on the 11th of August, shortly after his arrival. The second person attacked was a medical student who nursed the first case. He fell sick August 17th; on the 23d, two others were attacked; on the 25th, two more; on the 27th, five were attacked, all in the neighborhood of the first case.

From this time the disease spread rapidly through the village and adjacent country. Two only of the unprotected population escaped attacks.

It is not known to what circumstances their immunity was due. Under medical advice some of the citizens used baths of diluted muriatic and nitric acid as prophylactics, but they were not believed to have done any good. It is not even stated that the two who escaped had resorted to its use. Every species of disinfectant known, or suggested, was tried "until it was generally believed to be an injury." The treatment of the disease was particularly unsuccessful in the village, fifty per cent. of whites attacked dying; in the country, under dissimilar treatment, the results were more favorable. Total number of cases in town and vicinity, 164 whites; under 5 years, 8, 1 fatal; 5 to 10, 11, none fatal; 10 to 20, 14, 3 fatal; 20 to 40, 27, 11 fatal; 40 to 60, 11, 6 fatal; 60 to 80, 1, 1 fatal.

Total, whites, 72; 24 fatal. 33.33 per cent. Blacks, 89 cases, 10 fatal. 11.23 per cent. Three unstated as to color recovered.

The Yellow Fever at Mr. Y. F. Griffins, Four Miles East of Summit.

On the 28th day of July, Mrs. Wilhoft, with her three children and Mrs. Jewell, arrived from New Orleans and proceeded to her father's house the same day. Her trunks arrived the day following, and were taken there also, and were opened at such times during the week as Mrs. W. and her children needed articles contained in them, and were immediately closed again. August 5th, Mrs. Jewell returned to New Orleans, taking her trunks with her. Mrs.

Wilhoft came in to Summit the same day, and remained at my house until Friday evening, August 10th, when she was sent for by her brother-in-law, Mr. J. A. Jenkins; she visited her father's for her other two children, and such clothing as would be needed on her visit. Her trunk was opened at this time, and the contents taken out and spread on the beds, etc., to enable her to select such as she desired more conveniently. The balance of the contents were left to be replaced in her truuk by Mrs. Griffin and her children. The next morning, Saturdry, Alick, her second son, packed the things in her trunk, having to stoop over it for that purpose, and handling every article of clothing in it. Mrs. Griffin and the younger children were in the room at the time. Mr. G. and the eldest son, Young, being absent from the house.

On August 13th, three days after the packing, Aleck was taken with a chill, followed by high fever, with severe pains in head and back. August 14th, little Francis, the youngest child was taken with a chill, vomiting and pain in the head and back, with eyes swollen and very red; Mrs. G. was feeling unwell also, during the entire day. About daylight Thursday morning, little Mary was taken with the same symptoms; about noon the same day Whit, the third son, was taken down as the others had been (without vomiting). Mrs. Griffin had to retire to bed before sundown, and early in the morning had a chill, severe vomiting of bloody water. with pains in the head, back, etc.

About seven o'clock, Friday morning, August 16th, I saw the five sick of this afflicted family the first time. I left the house at 10 o'clock, A. M., and soon after the eldest son, Young, was taken with the usual symptoms; this was the third day from the first case. On Sunday morning Mr. Griffin was taken as the rest of the family had been, with severe pains through hips and back, also burning pain in eyes, without headache.

On Tuesday, August 20th, Alick had black vomit once, and lived thirty seven-hours afterward.

It is my opinion that Mrs. Griffin and the children, who

were in the room during the packing of the trunk, contracted the disease from that source—while Young must have taken it from Aleck, as he and his father were not about the room or trunk. After Mrs. Griffin was taken down, Mr. Griffin, being brought in direct contact with the disease, was taken down three days afterward.

That the deaths at Mr. Griffin's were from yellow fever, no one who saw them can doubt, and that the disease was brought there in the trunk spoken of there is no room for a doubt, Mrs. Wilhofts's little boys having just recovered from the yellow fever when she left New Orleans.

Truly yours, W. W. Moore,

Attending Physician.

Summit, Miss., Sept. 25, 1878.

Morgan City, La.

Visited by Dr. John M. Woodworth, late Surgeon General U. S. M. H. S., January 5th, 6th and 8th, 1879.

Morgan City, Louisiana, is situated on the east shore of Berwick Bay, or Atchafalaya river, which is the outlet to the Gulf for Grand, and other lakes which receive large accessions from the Mississippi river, at a point near Plaquemine, La. It is 81 miles distant from New Orleans, with which it is in daily communication by rail.

The site of Morgan City is flat, and only about four or five feet above ordinary water level of the Bay. There is only surface drainage. The buildings are of wood, and, as a rule, not much raised above the ground. The population of Morgan City, at the time of the outbreak, is estimated at 3,000. The probable number who fled the city on the breaking out of the fever, 1500. As the fever advanced, about 300 more fled, leaving about 1200 people present when the fever was at its height.

The first case of Yellow Fever occurred August 17th, and the last case November 10th.

The first death occurred August 21st, and the last death in November.

Total cases, 586: total deaths, 109.

The first case of yellow fever which occurred at Morgan City, was N. C. Hansen, a sailor who had been in the employ of the Morgan Steamship Company, running between Morgan City and Brazos, Texas. Hansen arrived in Morgan City on the 10th of August from Brazos, on which day he was paid off, and went to Mrs. Cavanaugh's boarding house, near the steamboat wharf and railroad depot, which was his usual stopping place in Morgan City. Hansen had occasional ague-chills while on board the Morgan steamship "Harris," plying between Morgan City and Brazos, but did not give up work at any time while on board. On the 12th of August, Hansen went to New Orleans, where he remained two nights and one day, and while there he visited a house of prostitution. On Wednesday, the 14th of August, he returned to Morgan City by the railroad train, which arrived at noon, and having eluded the quarantine officers, returned to Mrs. Cavanaugh's boarding house. On Friday and Saturday following Hansen's return, he spent some hours on the Bay and went in bathing. He ate a hearty supper on Saturday evening, the 17th of August, and was attacked soon after. Dr. W. H. Gray was called to see him the next morning at 9 o'clock. The patient complained of pain in his head and back, had a high fever, eyes were congested, tongue loaded at the centre with a whitish coat and the edges red. An examination of the urine disclosed a large amount of albumen. He had black vomit on the 22nd of August, and died soon after on that day. He commenced to turn yellow before death, and subsequently to the fatal result, his skin became the color of an orange.

Fact Note: Dr. Gray states that in 1877 he treated a case of yellow fever in the same room where Hansen died: a seaman who had arrived in Morgan City by boat from an infected city.

Two days after Hansen's death, August 24th, William Bailey, a seaman boarding at Mrs. Cavanaugh's, who nursed Hansen during his sickness, was taken with the fever and died August 28th. Bailey came from Havana three weeks before his sickness.

The third case was Mr. J. G. Brookshire, an editor of a paper who lived two doors west of Mr. Cavanaugh's. A small building used as a physician's office separates Mrs. Cavanaugh's boarding house from the house where Brookshire lived and had his office. Brookshire was greatly alarmed upon the appearance of the fever in Morgan City and had been drinking and was up at night previous to his attack on the 22d of August. His skin became somewhat yellow before death, which occurred in convulsions on the 27th of August. Mr. Brookshire was attended by Dr. McGuffey, who died subsequently, probably of yellow fever.

The 4th, 5th and 6th case were Joseph, aged 4, and Edward, aged 8 years, both sons of Mrs. Cavanaugh, and Robert Brown, a sailor, all of whom resided in the same house where Hansen died. They were taken sick on the same day, August 26th, and Joseph Cavanaugh died on the 30th, with black vomit. Edward Cavanaugh and Robert Brown recovered. Brown had been at Mrs. Cavanaugh's two months before his sickness.

The 7th case was Pat. Mahoney, who resided in the same house with Brookshire (No. 3). He was taken on the 30th of August, and recovered. Dr. White, who attended him, reports that the fever lasted 96 hours with a temperature ranging from 103½ to 104. There were 5 cases and 3 deaths in this house, including No, 3 and No. 7.

Mrs. Cavanaugh's house is situated on the north-east corner of First street and the railroad street. On the corner of the next block, east, is a coffee-house, and the next building beyond, fronting the railroad is the post-office, which is also the residence of the postmaster and his family. Matilda Miller, 8th, daughter of the postmaster, aged 4

years, was taken with yellow fever on the 30th of August, and died of black vomit on the 1st of September.

Ada Miller, 9th, a sister of Matilda Miller, aged 2 years, was taken sick with the fever on the 30th of August and recovered. The postmaster attributes the sickness of his children to the fact that they threw themselves upon the mail bag from New Orleans two or three days before their attack.

On the 31st of August, Thomas Carpenter, a sailor, residing at Mrs. Cavanaugh's, who had nursed Hansen and Bailey, was taken with the fever and died of the black vomit on the 5th of September. On the same day that Carpenter was taken sick, Peter Williams, Mrs. Cavanaugh's colored cook, was also attacked, but recovered. These were the 10th and 11th cases.

The 12th case was Amile Celestian, a shoemaker, who was attacked September 1st, and died of black vomit September 9th. Celestian lived on Front street, corner of First, the next house around the corner from Brookshire and Mahoney, the 3d and 7th cases. There were in the Cavanaugh boarding house, at the time of the outbreak: Mr. and Mrs. Cavanaugh, three children, eleven boarders, and one servant. Four boarders, two children and the servant had the fever. Mrs. Cavanaugh had yellow fever with black vomit in New Orleans in 1857. Mr. Cavanaugh claims to have been through three epidemics without having the fever. Of Mrs. Cavanaugh's boarders who remained in the house after the outbreak only two escaped the fever. One shipped for New York, was taken with yellow fever on the passage and died at the New York Quarantine.

The fever first spread along the street fronting the railway on the south side "as directly as if the infection had been shot out of a gun."

When there had been 115 cases and 21 deaths, 82 were found to have been in the immediate vicinity of the first case. This calculation was made by Mr. Cavanaugh, of Morgan City, at the time.

The first case of yellow fever north of the railway was the daughter of William Martin, who resides three squares from the railway. She was attacked September 14th, and died September 15th. This was the 36th case. William Martin kept the coffee house, before referred to, as being on the corner of the street opposite Mrs. Cavanaugh's boarding house. Before Martin's daughter sickened he had assisted to burn the bedding of a yellow fever victim near his coffee house. Martin had the fever subsequently and died.

After the middle of September, the fever spread rapidly over the town. The period of greatest prevalence was from October 7th to 24th. Three or four seamen were taken sick on the vessels at the Morgan City wharf, but all of them had frequented the town before their attack.

Notwithstanding the circumstances attending Hansen's movements and attack were confirmed by Mr. and Mrs. Cavanaugh, by Hansen's physician, by the Mayor of Morgan City, and by the agent of Morgan's railroad and steamships, every other possible source of infection was carefully enquired into. They are as follows:

A Mexican circus troupe, consisting of about 30 persons, their baggage and 17 horses, shipped on board the Morgan steamship, "I. C. Harris," Capt. Brown, at Brazos, Texas, on the 18th of June, 1878. The troupe had been playing at various places in Mexico, and came to Brownsville from Monterey and Matamoras. They played in Brownsville, which was the only place they tarried in Texas. The Harris left Brazos with the troupe on the 19th of June, at 5.30 o'clock in the morning, and arrived at Morgan City June 21st at 6.30 A. M. The troupe took the train for New Orleans at noon that day, and camped at "Lake End," New Orleans, where they played for some time. There was no sickness en route from Brazos, and a careful inquiry made by Dr. Bemiss into the history of the troupe while in New Orleans, did not throw any suspicion upon them as the probable carriers of yellow fever poison.

The steamship "W. G. Hewes," of Morgan's line, Capt. Thos. Morgan, was the only vessel which arrived at Morgan City during the summer of 1878, from an infected port. The Hewes left Havana August 1st, and arrived at Morgan City August 4th. The officers and crew numbered 24. There were no passengers. No sickness occurred on the passage, or subsequently, so far as could be ascertained. The crew were not allowed to land at Morgan City, or any one permitted to go on board, excepting the Quarantine officers. A portion of the crew went by boat, via Bayou Bœuf, to a station on the railroad of that name, — miles from Morgan City, where they took the train for New Orleans. Capt. Morgan went from Morgan City to New Orleans by rail, to engage a crew for his vessel. He engaged the same men who served on the Hewes from Havana, and brought them back to Morgan City by rail, where they immediately went on board the Hewes, then anchored in the Bay, without mingling with any one in the town. On the 11th of August, the Hewes started for Truxillo, Honduras, between which port and Havana, she sailed during the continuance of the epidemic. There was no sickness on board during the passage of the Hewes to Honduras. A cook shipped at Morgan City before the departure of the 11th of August, and died one month later on the second trip from Havana to Honduras. At the time of the arrival of the Hewes from Havana, Mrs. Cavanaugh was sick in bed from intermittent fever, as she supposed. Several of the crew of the Hewes were indebted to her for board, and, on learning their departure for New Orleans, via Bayou Bœuf, she went to Bayou Bœuf station by rail, on the 5th August, to collect the money due her from the seamen. Mrs. Cavanaugh states that she only saw the seamen long enough to receive money from them, and then returned home the same day. After reaching home she had a chill, followed by fever. On the following morning, August 6th, Dr. W. H. Gray was called to see Mrs. Cavanaugh. The following account of the case is from the Doctor's case book, noted at the time:

" The next morning, August 6th, I was called in, and found her (Mrs. Cavanaugh) suffering with severe frontal headache and pain in the eyes, back and limbs; pulse 100, hot fever, and great restlessness. Ordered a hot mustard foot bath, a bottle of solution citrate mag., cool applications to head, and orange leaf tea ad lib.

9, P. M. Fever continues, surface hot and moist; still complains of headache and pain in limbs, but not so much pain in eyes. Pulse, 90. Ordered another foot bath, and if restless and unable to sleep, lig. morph. sulph. one teaspoonful every hour until sleep is induced.

August 7th, 3d day. Passed a quiet but sleepless night; pulse 90, surface still hot and moist, tongue pasty with red edges, not so much headache or pain in the back and limbs. Has had no dejections from the bowels. Took a cup of tea with milk and soon after vomited; mind perfectly clear. Ordered 15 grains of blue mass to be followed by a saline cathartic in eight hours.

7, P. M. No action from the bowels; skin continued hot and moist; pain in head and back not so severe. Ordered one bottle sol. cit. mag. to be taken at once, and during the night to have a mixture of hydrate of chloral and bromide potass. until sleep is obtained.

August 8th, 4th day. Had two dejections during the night. "Very little sleep." Great jactitation; pain in head and eyes severe; head hot, eyes injected; talks continually; anorexia continues; pulse 80. Ordered two grains quinine every hour during the day.

8, P. M. Has had two more passages from the bowels. Pain in head and eyes continues without abatement.

August 9th, 5th day. Slept well last night until 10 o'clock, when she woke, got out of bed, and was found on the gallery. A dose of the chloral and bromide of potass. mixture was given, after which she slept well until morning. Surface cool; pulse 75; eyes still injected, and still complained of pain in the forehead. Tongue still pasty; will take no nourishment.

5, P. M. Condition the same.

August 10th, 6th day. The patient without the slightest pain; anorexia gone; took a cup of tea and slice of toast. Convalescent.

August 11th, 7th day. Had a good night; passed a whitish jelly from the bowels. Appetite good. "Feels perfectly well. The prominent symptoms in the above case were: 1st. A chill. 2d. Fever which continued with greater or less severity until the 6th day. 3d. Pain in the forehead, eyes and back. 4th. Suffusion and injection of eyes. 5th. A soft pulse, at no time exceeding 100. 6th. A hot cutaneous surface covered with perspiration. 7th. The full possession of the mental faculties. 8th. Great jactitation. 9th. The pasty tongue. 10th. Vomiting and nausea. 11th. Complete anorexia. 12th. The passage of a whitish jelly-like stool on the 7th day. Was the case one of yellow fever?"

On interrogating Mrs. Cavanaugh, she stated that she had a similar sickness during last Christmas week and has had similar attacks before her sickness in August last.

Quarantine.

The plantation of Hon. C. B. Darrall is situated about one mile from Morgan City. A strict quarantine of non-intercourse was enforced during the epidemic, and no case of yellow fever occurred on this plantation. Cases occurred within one-half mile of the plantation.

The Lawrence family, six in number, all unacclimated, reside about two blocks north of the corner of Front and Greenwood streets, where several cases of yellow fever occurred. Between Greenwood and Brashear streets on Front street is an ice house, and between the ice house and the residence of the Lawrence family, a distance of about 540 feet, there are no buildings of any kind. The Lawrence family had no communication with the people of Morgan City after the appearance of the fever, except through a colored boy, who brought the mail and carried messages. The boy was not allowed to remain on the place. The family escaped the fever.

Individual Prophylaxis.

P. H. Metz, a young man residing in Morgan City, a native of Louisiana, never had yellow fever; slept in an office; did not go into any house where the fever was, but mingled freely with the people on the streets; took small doses of quinine daily, and did not have the fever.

Judge E. B. Mentz, a resident of Morgan City, never had the yellow fever; took small doses of quinine daily; nursed yellow fever patients; suffered more or less from headache during the epidemic, and during two days had a high fever, but did not discontinue his ministrations to the sick. Upon inquiry of a large number of persons who had previously had the yellow fever, and were present during the late epidemic, they state, without exception, that they suffered daily from headache and "felt out of sorts."

B. F. Winchester, Esq., a lawyer residing in Morgan City, took a small quantity of quinine and cinchona bark in whiskey every day and gave it to his family for three weeks after the outbreak. About the 10th of September, they discontinued the quinine and cinchona and relied on "Holman's pads." Mrs. Winchester was taken with the fever on the 29th of September. Their son, ten years old, was attacked October 2d and Mr. Winchester October 3d. The remaining children, seven and nine years of age, were taken about the third week in October. The second case terminated fatally on the seventh day after having had black vomit.

Mr. Winchester was amongst the fever from the commencement of the epidemic to the date of his attack. The mother and children remained at home after the outbreak, except on the Sabbath day, when they all attended church.

Some clerks and employees at the railroad depot and wharf buildings slept at the depot and on the steamship during the epidemic, and none had the fever.

The exemption is attributed by the clerks and employees to drinking water out of an iron tank.

Yellow Fever in Assumption.

Reported by T. B. Pugh, M. D.

The first case which appeared in my neighborhood was Mr. Vilmont Rodrique, on the 29th of August. First, also, in the parish. This, however, was not my case. In from eight to ten days, there were from twenty to thirty cases in his neighborhood. Many of those who contracted the fever had nursed Mr. R., or visited him while ill, and no cases occurred for some time, except among such. The above instance was one of importation of the disease by fomites. The fomites in first instance were in blankets and woolen goods, which Rodrique had received from New Orleans on 3d and 16th of August. In the second instance, according to Dr. McNeil, the fomites were in the personal baggage of Mrs. Grazian, which was transported by steamboat from New Orleans, and from Donaldson by flatboat.

There was no quarantine until fever had occurred in the parish.

A portion of our parish, known as Bayou L'Ours, has escaped. By authority of Police Jury they were allowed to quarantine against infected places, and against remainder of the parish.

No cases here were of local origin, none which cannot be accounted for by fomites. From these cases the fever spread.

Dr. Beasley was exposed to the fever about six days before he took it. In no other case was the period of incubation carefully noted. No general measures of disinfection were put in practice. Private parties used different disinfectants, carbolic acid, sulphate of iron, pot. permanganate, sulphur, tar, and pitch, and some, simply smoke. I don't think any good was accomplished by their use. Many tried hypo-sulphite of soda, as a prophylactic, others white mustard seed, others quinine in whisky. I do not think these preventives amounted to anything whatever. As many had yellow fever who had taken preventives

as those who had not. I think all atmospheric impurities, proximity to privies, etc., have a tendency to increase death rate. The same is true of malaria, which is often complicated with yellow fever.

The yellow fever poison, so far as I have known, is the same,—more or less severe, but the same characteristics attend its action.

The thermometrical range was between 70° and 80°. Winds were easterly, with moderate dryness, heavy dews at night. Rains were quite frequent, with two or three storms.

According to my experience, fright renders persons more liable to yellow fever, also, excess of any kind.

Blacks resist the yellow fever poison in a much greater degree than whites, mulattoes less than blacks, but more than whites.

I have known no instance of genuine relapse in my practice.

As an instance of second attack, I mention that I had an attack of yellow fever, so pronounced by a good physician, in 1867, and another on 30th September, 1878, when I was attended by Dr. Stone, of New Orleans.

As stated above, the first case in the parish occurred on the 29th of August; the patient had not been to New Orleans, but his brother went there on the third of August, and purchased goods, according to common report. I am certain he was in New Orleans at the time. Again, on the 16th, he received a lot of woolen goods, which were opened and placed on the shelves of the store. In a few days (29th) Mr. Rodrique was taken sick and on the 9th day died. The two physicians who attended him disagreed as to diagnosis, one pronouncing it bilious remittent, the other yellow fever. Subsequent events proved the correctness of the latter view. All his children had the disease, and from thence it spread all through the neighborhood. In Labadieville, fever was brought there by a Mrs. Grazian, who came to New Orleans from Biloxi, and report says, nursed a brother who had the fever. She was taken a few

days after her return and died, and the greater number of her family had it. From this source it spread into Labadieville and surrounding country. Type of fever generally mild; fever lasting from 30 to 70 hours. The mortality in Labadieville was very considerable, about 50 dying out of 150. This was owing, not so much to the violence of the epidemic as to bad sanitary arrangements and want of proper food, medicine and nursing. Labadieville is a small town situated on the Lafourche, about eight miles from Napoleonville. The houses generally frame, and one story to one and a half high, built almost on the ground, ventilation exceedingly bad, privies and residences very close together, with a large swamp immediately in the rear of the village. This swamp has nearly all the time more or less water in it. In 1853, Labadieville escaped, whilst the rest of the parish was invaded by the disease.

Buras Settlement, La.

Abstract of Report by Dr. C. P. Wilkinson.

This place is located on left bank of Mississippi river, about one mile above the Quarantine Station.

No manner of communication had been held with the station. A supposed case occurred in the neighborhood on the 25th of August. The first case in Dr. Wilkinson's practice was 3d September. This was followed by four other cases, all in the same house, occurring September 4th, 5th, 6th and 12th.

These people had received rice sacks from New Orleans about the 28th of August. The sacks were stored in the house where they lived and were used for beds to sleep upon. The disease was limited strictly to this house. Other forms of fever prevailed in other houses of the settlement; but no yellow fever except the cases in this and among those who went to nurse them. Dr. Wilkinson reports the following:

A case of distinct yellow fever came under my observation at the fisherman's camp, on Bayou La Chute; by the ordinary course of travel ninety miles from New Orleans

and fifteen miles from the Mississippi river. The young man had left New Orleans in August, for fear of taking yellow fever. Was visited in his cabin by a friend who left New Orleans with his baggage on or about October 2d, 1878; took two days to reach there. Was taken sick October 6th, being then four days out from New Orleans; was brought out to Mississippi river on October 8th, and died at Quarantine Station on or about October 10th. On October 18th, this young friend camping on Bayou La Chute, cut off from all communication except with fishermen, who only fished oysters in the neighboring bayous and bays, was taken sick on October 21st. I saw the young man; unmistakable yellow fever; he died on October 23d; black vomit, etc.

The following is the abstract of practice from this report: Under 5 years, two cases, two fatal; 5 to 10 years, two cases, one fatal; 10 to 20 years, four cases, none fatal; 20 to 40 years, three cases, none fatal; 40 to 60 years, three cases, none fatal. Total: fourteen wites, three fatal; 21.43 per cent.

Addendum of December 30th, 1879.

Cases of Yellow Fever Occurring in Buras, Plaquemine Parish, La., in 1878, Collected from All Sources.

Reported by Dr. C. P. Wilkinson.

Groups.	No. of cases over 10 years.	No. of cases und'r 10 years.	Cases where Black Vomit Occurred.		Cases where Suppression of Urine.		Deaths of persons under 10 years.	Deaths of persons over 10 years.	Total No. of Deaths.	Total Recoveries.	Total No. of Cases.	Remarks.
			Died.	Recovered.	Died.	Recovered.						
1st...	5	2	2	...	...	...	2	1	3	4	7	Limited to one house.
2d....	6	5	2	...	...	...	3	2	5	6	11	Limited to 3 families in three houses.
3d....	2	...	...	...	...	...			..	2	2	Limited to one house.
4th...	1	...	...	...	...	...		1	1	..	1	Limited to one house.
5th...	2	...	1	...	...	...		2	2	..	2	Limited to one house.
6th...	1	..	1	...	1	...		1	1	..	1	Limited to one house.
Total	17	7	6	...	1	...	5	7	12	12	24	

Grouped by alleged sources of infection and occurring at different epochs. Group 1st. Reception of large number of empty rice sacks from New Orleans. First case, child, three days after sleeping on sacks. Group 2d. Member of a family living here returned from Pilot Town, ill with yellow fever; two weeks afterwards another member of same family, with all her baggage, returned from same place; four or five days after child taken sick with yellow fever and in short time two more of same family taken sick—members of two other families came to nurse; both returned home sickened and yellow fever spread in each family to all who had not previously had the disease. Group 3d. Two boatmen went to New Orleans and had slept on shore one night—returned and sickened. Group 4th. Origin not alleged. Group 5th. Two boatmen taken sick after leaving New Orleans in their boat. Group 6th. Young man unpacked a trunk of woolen clothing which had come from New Orteans.

I cannot say that I am convinced of the communication of the fever from house to house or by families, as the arrangement would tend to show.

Yellow Fever in Clinton, Parish of East Feliciana.

(*Reported by Dr. O. P. Langworthy.*)

The first case of yellow fever occurred on September 7th, 1878, not in Clinton, but about five miles sout-east, in the person of a planter who was also clerk of registration. He died September 11th.

We have no satisfactory way of accounting for the attack. A negro living on the gentleman's place asserts that the gentleman went to Baton Rouge, and procured goods. This, however, is exceedingly doubtful.

The second case occurred September 27th, the third on September 29th; one case each day of individuals in the same house, who had assisted in nursing the first case.

The books for ward poll books, to be filled out by the clerk from the parish register, were, I understand, sent some time in August, from New Orleans, by steamboat, and

railroad via Port Hudson to Clinton. On these registration books, received as freight from New Orleans, the first case went to work about one week before taken ill.

Our place was quarantined. All persons from infected districts were forbidden to come within the corporate limits for 15 days, and all goods thought to be of a character to convey the germ were forbidden to be brought in. The mayor to decide which were infected districts. There were no violations or evasions of the quarantine that I knew of.

From the following facts I believe quarantine has protected our place from yellow fever. There was not, up to October 1st, any case of yellow fever in the corporate limits, except in one family: Sixteen days after the first case, a child from the family in town, came in contact with a member of the family in the country in which it originated. In two days the member himself was taken ill, and twenty-one days after contact the child in town took the fever. The child in town was taken twenty-one days after contact, and two other cases in the same family, but no more from that or any other family from those.

In three cases the period of incubation was, I have reason to believe, sixteen, eighteen and twenty-one days.

All known measures of disinfection for houses, etc., were used, such as lime, carbolic acid, burning of tar, solution of Ferri sulph., etc. But I do not think they had anything to do with prevention.

All the various advertised measures of personal prophylaxis were resorted to. Many on my suggestion avoided unnecessary exposure to night-air and mid-day sun, also taking two or three grains quinine every morning. A plan that I found most efficacious in 1867, when we had a severe epidemic.

There was at two of the places where the fever prevailed, strong evidence of epidemic influence intensifying itself. The number of cases increasing from four sick in three or four days, to six more of the same family, taken sick in twenty-four hours after, and servants and nurses taken rapidly.

No one escaped who was exposed in that house except one nurse, another physician and myself, and the other physician was but very little in the house, and I had, in 1853, a very severe attack. It only stopped for want of material to work on.

I observed more children, in proportion to the number of cases, than in previous epidemics. They seemed to suffer more from acute pains, and several appeared more like cases of meningitis, than I ever observed before.

I do not know any difference in degrees of resistance to to yellow fever poison, by different races or individuals, as nearly all who were exposed to it took the fever.

There were three cases of previous attacks that I know of, one in which the first attack was in 1858, two in which the first attack was in 1867.

Dr. W. H. Harrison had, I considered, a genuine relapse from an attack at Port Hudson.

The cases in this report were not all strictly my patients. I, however, saw all but four or five. The cases were on four different plantations. Two were so close that they joined fences. The other two from those were: one about six miles south-east, and the other about the same distance in a northwesterly direction. Three of the places were four, five, and eleven miles south-east of Clinton, while the fourth was two miles west of Clinton. There happened, however, to be a mingling of the residents of those four places, that accounts for the spreading in that way. The origin of the first case is still a mystery, and was the cause of my diagnosis of it being doubtful. My time was so occupied in traveling from place to place, and giving the proper attention to the patients, that I could not take notes of the cases sufficient to make a good clinical report. I noticed, however, the temperature and pulse considered characteristic of yellow fever. All that died had suppression of urine, but all did not have black vomit. Three that got well had black vomit, and several that recovered had hemorrhage of nose and gums. I believe more would have got well had they been so situated

as to receive the proper attention in the way of nursing. Another trouble was, that in carrying out the rigid quarantine, which I think saved the town, necessary arrangements to get supplies for any that *might* be taken sick were neglected.

Three physicians were taken ill, one of whom died. These were: W. H. Harrison, M. D., of Iowa, I believe, relapsed soon after arrival, but recovered. Original attack was at Port Hudson.

C. H. Rutherford, M. D., of this parish, originally from Georgia, had a very severe attack, but recovered.

J. I. Cavert, M. D., twenty-five years in this Parish, but originally of New York State, died. He would not give up even when he had the fever on him. He was a noble man, a zealous searcher after knowledge, and never shrank from faithful performance of duty, no matter how laborious or dangerous. He was 53 years of age.

Clinton, La., July 23d, 1879.

S. M. Bemiss, M. D.,

Chairman Yellow Fever Commission.

Dear Sir—I return the "provisional table" received yesterday, with only a single remark in regard to the yellow fever in vicinity of Clinton last year. At the time, it was not believed that the case occurring September 7th had been out of the parish for over thirty days. Sometime after the epidemic, however, there was reliable evidence of the gentleman having visited Baton Rouge the week before, but only gone from home part of one day and one night.

Since my first coming to Clinton in May, 1853, two very severe epidemics have visited the town; one in 1853 and one in 1867; also a few cases in 1855. As to a statistical report, I cannot give it. However, you can be safe in saying that there was over 300 cases and 75 deaths in 1853, and over 300 cases and 55 deaths in 1867. The few deaths in 1855 were 2 from exposure in Port Hudson, and 3

from opening a box of bedding that negroes had used in Jackson when sick with the fever. The owner of the negroes, and the bedding, and also 2 others took the fever and died after opening and unpacking the articles. No epidemic, however, followed.

Hoping this imperfect report will be of some service, I remain, Yours respectfully,

O. P. Langworthy.

The following is extracted from the report of Dr. R. H. Day, of Baton Rouge:

In my own practice there were—

Whole number of whites	98
Whole number of Blacks	230
Whole number of Mulattoes	110
Cases occurring before reports were commenced	19
Total to October 26th, 1878	457

NUMBER OF DEATHS.

Whites, 7; Mulattoes, 8; Blacks, 3: Total, 18.
Of these, 10 were adults; 8 children.

I regret that I have not the time to make my answers fuller and more precise. The continuance of the epidemic in our city and surrounding country, and sickness in my own family prevent me, and have long delayed this response.

There are many facts in my possession gathered in this and previous epidemics, which I believe, would be service in your investigation, but I have not the time to give them.

The first unmistakable case which I saw in my own practice was on the 29th of August, had been sick three or four days, when I visited her. She was on North street one-half square east and one square north of the original cases. It is hardly to be doubted, from her known habits, that she mingled with the delegates and visitors from New Orleans, or with the persons first attacked with the disease.

My second case was on the 3rd of September. She was

a mulattress, and had washed the day before some clothes of a child who had died of the fever on the 1st. She lived nearly one-half mile from the place of infection and there was no other case in her neighborhood for some days, and no other source of affection that can be ascertained.

My third case was a white woman, who went to nurse a yellow fever subject on Main street, on the 30th of August. On Monday night, the 2nd of September, she slept on and covered with the bed clothing that had been removed from the patient that day. On the next day, 3rd of September, at 2 P. M., she was very violently attacked; had a severe spell, but recovered. This was her only recognized chance of infection; and if so, her disease was contracted between the 30th of August and the 3rd of September. She went to her residence in what is known as "Cat Fish Town," below Delavodnier saw mill, in which section of the city there had as yet been no case of fever. My fourth case, a woman nearly white, was with this patient on the evening and night of the 3rd, and about daylight was violently stricken down with this fever. Her residence was over a quarter mile lower down, on the river, and that much further from the originally infected locality. As far as I could learn, she had had no other exposure. If so, she contracted a most violent attack between 4, P. M., of the 3rd, and 5, A. M., of the 4th of September.

LETTER FROM DR. DUPREE.

BATON ROUGE, July 23rd, 1879.

DR. S. M. BEMISS,

Dear Sir—Yours of the 14th has been received, and I hasten to reply. I find your table correct as far as Baton Rouge is concerned. We really had no quarantine until we had a number of cases of yellow fever. Dr. Buffington and myself both believe in the importability, the contagiousness and exotic character of the fever. We determined to prevent the assembling of the Convention at Baton Rouge on the 6th of August, 1878, knowing that the fever

prevailed in New Orleans, and that the Convention would be largely attended by representatives from New Orleans. The whisky influence prevented our appointments as members of the Board of Health, until such a time as it was necessary to take care of a number of the sick. Our object was then to isolate the cases, but the seed was too broadly sown by the members of the Convention, scattered as they were over our small town.

Very respectfully,

J. W. Dupree, M. D.,

President State Medical Society,

Sec'y and Health Officer Baton Rouge Board of Health.

The above extracts are all which can be published at length in this report. It has been a very difficult matter to select those which may be supposed to possess the most interest and value. I shall not assert that I have been altogether successful in my efforts to accomplish this end. It is my belief, however, that the extracts herein published are sufficient to illustrate the mode of spread of the disease. The following table of results of practice comprises the observations of three practitioners in different parishes of the State.

White.			
Ages.	No. treated.	No. fatal.	Mortality rate.
Under 5.....	8	3	37.50
5 to 10.....	31	8	25.80
10 to 20.....	27	4	14.81
20 to 40.....	61	16	26.22
40 to 60.....	24	4	16.66
60 to 80.....	2	1	50.00
Totals.....	153	36	23.52
Colored.			
	147	5	3.40

It may be asserted with safety, that in the epidemic of 1878, about 36,000 cases of yellow fever occurred in Louisiana, of which number not less than 6,000 were fatal.

Yellow Fever in Louisiana in 1879.

The first case of yellow fever which occurred in Louisiana in 1879 was a sailor from the S. S. Baltimore. This man was attacked on the 21st of March, and recovered under the treatment of Dr. Loeber, at the Touro Infirmary. No other cases are in any manner traceable to this.

Subsequent events in the history of the disease indicate that the next cases were those in the Stout family, residing at No. 184 Third street. The physician who attended these cases is a thoroughly competent and conscientious man. The sickness, whatever its nature, was mild, and all the cases recovered. The medical attendant admitted that the disease might have been yellow fever, but so mild that he did not suspect its true character. When the servant who left this family fell sick of yellow fever at Mississippi City, questions began to arise in regard to the sickness which had prevailed in the family before she left it.

Whether one believes that the cases in the Stout family were yellow fever, or some other form of sickness, there are two historical facts which should claim our attention. The first is, that the girl actually conveyed the infection from New Orleans to Mississippi. The second is, that the first undoubted case among the citizens of New Orleans occurred in close proximity to the house where the girl had lived. This case was Vicensa Spano, living at the corner of Second and Constance. This young girl was the daughter of a dealer in fruit, and it was alleged that the servant at Stout's frequentlyvisited this stand.

In so far as precedence affords any valuable testimony respecting the origin of the outbreak of yellow fever in New Orleans, the servant at Stout's was attacked three weeks before the Spano case. The family who, in 1878, occupied the premises where the Stout family resided had suffered from yellow fever during the epidemic of that

year. As there was no known exposure on the part of the Stout family to infection from other sources, this instance affords strong ground for the belief that the poison had been in some manner preserved through the winter, to be recalled to life and activity by the warmth of summer.

In 1879 the State Board of Health, the Auxiliary Sanitary Association, and the National Board of Health joined hands in efforts to arrest the spread of yellow fever. The work to be attempted was a noble one, and the field was certainly broad enough to invite concerted action.

The following extracts from a letter written at the date of commencing this joint work, will show the measures agreed upon:

"New Orleans, Sept. 1st, 1879.

Dr. J. S. Billings,

My dear Doctor—When your telegram reached me, announcing appropriation set apart for this city, I immediately requested a meeting of the Board of Health, and we proceeded to organize a plan of work. Estimates will be sent on to-morrow, which will be intended to include all expenditures for this month. They will not exceed $4,000, and will include all expenses for isolation, disinfection, and miscellaneous sanitary measures. The plan of work, as now roughly drafted, is, first, to lay out the infected district so as to include a larger area than that really infected. Thus we include all within the boundaries telegraphed yesterday—St. Charles and the river, Jackson and Louisiana avenue. This area is sub-divided into seven sections, each of which is given to a Sanitary Inspector of the State Board, the whole under the supervision of one of their number, Dr. Bayley, who was yesterday selected by themselves. Dr. Bayley is to make to *me* daily reports of everything done, and everything which occurs. Each section has one sanitary policeman, one light wagon and driver, and four laborers. They are to proceed from house to house in each section, cleaning and disinfecting, whitewashing fences, trees, etc., flushing

gutters, opening drains, cleaning under houses, and rendering everything as sweet, wholesome and cheerful as it is possible to do.

I have striven, in my terrible encounter with yellow fever in the Hood family, to establish a precedent, which should prove valuable in the future. My efforts were, first, to isolate the family by having the gates locked and the servants instructed to keep visitors away. In this I was indifferently successful, for during the confusion which death occasions in a great family, servants would forget or neglect orders. At last, I placed a sanitary officer at the gate.

When Mrs. Hood died, I asked the general to allow me to inclose the coffin in an outer wooden box, and surround it with charcoal. He replied, "Doctor, I leave it all to you, but stay all night by me," which I did and superintended the whole matter, placing the body immediately in the double enclosure. I next asked him to permit the burial to take place at 10 o'clock in the morning, and to have no notice put in the papers, and to have only two carriages. To this he also consented. When he died, I carried out precisely the same programme. No notice was put in the papers, and no invitations sent out. The citizen soldiery here are nearly 3000 in number. They were devotedly attached to Gen. Hood, but contented themselves with permission to select a squad of eight, who had all been through attacks of yellow fever, to meet the body at the grave and fire a volley over their dead General. There were not fifty persons at the grave. The child was treated in the same manner.

The bed-clothes and wearing appparel were thrown into boiling water, fumigated afterwards with sulphur in a room over the carriage-house, and everything of small value burned over a hot fire. The grounds around the house have been swept, washed and chloride of lime scattered profusely around. The rooms of the dead have been fumigated where sickness in adjoining rooms did not prevent. Whenever it did, vessels of moistened chloride of lime were placed in the rooms

Free ventilation has been practiced during treatment of the cases. At the time of the first attack, there were *thirteen* unprotected persons in the house, four have fallen sick; leaving nine more liable to the disease. Before leaving home, a week before any of them were attacked, I advised the General to watch his family, giving each one a grain of quinine twice daily. This was directed as a tonic, and to substract from any attack of yellow fever the malarial pathological element, if present."

From the above extract it will be seen that this cöoperative work was intended to accomplish three principal purposes, each of which is important to be attained in any successful efforts to arrest the spread of yellow fever .

1st, The prompt and complete isolation of the sick.

2d. The instantaneous disposal of the bodies of the dead, so that no infection shall be communicated from them.

3d. The disinfection of persons, localities, premises and things, of every and any description, liable to become carriers of infection.

While chemical agents were employed as disinfectants, we endeavored to secure all the benefits of the most thorough processes of cleansing. We concluded that if we knew of no chemical agent which could be successfully used in the open air to destroy yellow fever poison, we would at all events, change those conditions of localities, premises and fomites, which appear to favor the preservation of the infection. We believe that the experiment was sufficiently satisfactory to demand its repetition.

The first case which occurred in Louisiana outside of New Orleans, in 1879, was at Morgan City. Louis Aufret, aged five years, was taken sick on the 25th of July, and carried while sick to New Orleans, where he died on the 1st of August. Here again, there is very strong reason to believe that the infection survived through the winter. The child had been in Morgan City about three months, and lived in a house which was infected in 1878. It may also be mentioned that during the epidemic of 1878, twenty-

three cases and fourteen deaths had occurred in the square in which the child resided.

I think it may be positively stated that in all other cases where yellow fever appeared in Louisiana in 1879, the evidence, both direct and presumptive, is in support of introduction by portation.

The following table will show the prevalence and mortality of yellow fever in Louisiana in 1879.

NAMES OF PLACES.	DATE OF 1st CASE.	NO. CASES.	NO. DEATHS	MORTALITY RATE.
New Orleans	Mar. 21	48	19	39.58
Morgan City	July 25	89	25	28.09
Arseneau Place	Aug. 10	45	3	6.05
Bayou Bœuf	Sept. 5	77	21	25.94
Berwick City	" 8	75	16	21.34
Centerville	" 20	44	14	31.81
Deslonde	" 22	39	1	2.56
Deslonde Bros	"	1		
Lafourche Crossing	Oct. 2	40	9	22.50
W. W. Pugh	" 2	33		
Upper Texas	" 6	1		
Mary Plantation	" 10	45	3	6.66
Attakapas Canal	" 10	66	18	27.27
Foley Plantation	" 10	4	2	50.00
Napoleonville	" 11	3	1	33.33
Thibodeaux	" 15	11		
Cypremort	" 17	33	9	27.27
Frezeaux	" 22	2	1	50.00
Malmot	Nov. 1	1		
Phar Place	" 10	6	5	83.35
French Settlement	" 19	60	5	83.30
Pattersonville	" 26	2		
Lower Texas		30	7	23.33
Vivian		4	3	75.00
Blanchard		1	1	100.00
Aucoin Home		6	3	50.00

The whole number of cases in Louisiana in 1879 was 752, of which 162 were fatal, affording a mortality rate of 21.52. The following report will be found of interest.

New Orleans, Sept. 27th, 1879.

In pursuance of instructions received from Dr. Bemiss, member of the National Board of Health, dated September 22d, I proceeded to "St. Thomas Landing," on the Bayou Lafourche, parish of Assumption, La., to investigate certain cases of yellow fever reported to exist there.

At 2 o'clock, P. M., 23d inst., I arrived at the residence of Theodule Arseneau, a planter, situated one mile from the Bayou Lafourche, in the rear of "St. Thomas Landing," and a short distance—several miles—from Labadieville. The settlement, called in the language of the country, a "brule," anglice, "a clearing" made in the woods by burning, consists of the residence of Mr. Arseneau, the only white family, and seven families of colored laborers, numbering 35 persons. It is very isolated, surrounded on all sides by fields of growing sugar cane.

Two families, Mr. Theodule Arseneau's and his son Marcelin Arseneau's—nine persons in all, occupy the house. It is raised from the ground 3½ feet, clean and dry beneath; is well ventilated and not overcrowded.

Inspection of the surrounding grounds revealed no stagnant water, accumulations of decomposing vegetable or animal matter, or anything whatever offensive to the senses.

The drinking water is obtained from cisterns of ample capacity, is clear, and appeared to the taste destitute of impurities.

The same freedom from offending causes to health was observable in the dwellings and surroundings of the colored people.

I was informed by Dr. Blanchard and the Messrs, Arseneau, that the "bruslé" has always been remarkable for its exemption from disease, even the light forms of malarial usually prevalent in the summer and fall months in the low lands, and that it has never been visited by yellow fever before, escaping in 1878, when it prevailed in Labadieville. No sickness whatever prevailed there this summer prior to the present outbreak of yellow fever.

Louis Chance, a mulatto, residing in the nearest cabin to Mr. Arseneau's house, distant about 200 yards, left the settlement August 3d, on a visit to Morgan City, where he has two sisters residing. He remained there two days, and started for his home on the 10th of the same month. He informed me that on his way up, when near Tigerville, on the Morgan R. R., he was taken with a chill, followed by fever. After a short rest he pursued his journey and was quite sick on his arrival at home. He was confined to his bed and the house for eight days, but was not visited by a physician.

Four or five days after his return his wife sickened with the fever, with symptoms like his own, and at intervals of three or four days, four of his children also fell sick with the fever.

During the sickness of this colored family, the children of Mr. Marcelin Arseneau and his sister, Miss Emma Arseneau, made repeated visits to them. They were there one or two days after the storm on the 1st of September.

On the 13th of September, Mr. M. Arseneau's daughter, eight years old, was seized with fever, preceded by a chill attended with severe headache, pains in the small of the back and limbs, which lasted without intermission for three days and leaving her quite prostrate.

On the 14th of September, Alice Arseneau, six years old, was attacked in the same way, but with greater severity, the fever being very high, with intense headache, restlessness, nausea and thirst.

On the 15th September, Mrs. Theodule Arseneau was taken sick at 9 o'clock at night with chilliness; fever ensuing with all the symptoms attending the attacks of her grandchildren.

On the 16th of September, at 1 o'clock, A. M., Miss Emma Arseneau, aged 16, was taken with a chill, soon followed by intense fever and excruciating neuralgic pains "all over the body."

Dr. Blanchard, residing at Napoleonville, was sent for to attend the family on the morning of the 18th, at which

time he made the following clinical observations of these cases :

" The child first attacked, 8 years of age, was entering the second or calm stage of the fever, pulse about 100, temperature 100½, skin moist, eyes suffused, tongue coated white, edges and tip somewhat red, no nausea or tenderness of epigastrium on pressure."

The second daughter, Alice, 6 years old, taken sick on the 14th September, was very restless, skin hot and dry, much heat and pain in the head, pulse quite frequent, temperature 103½, gums turgid and red, eyes injected and discolored, nausea and tenderness of the epigastrium ; had thrown up black vomit ; urine albuminous, which increased to fully 20 per. cent. the day after.

The fever lasted five days, leaving her quite weak, with icterosed skin and conjunctiva.

Mrs. Theodule Arseneau was attacked on the 15th September. Saw her at the same time with the above. Her attack seemed to have been quite a mild one ; the fever had ceased on the third day, 17th inst. On the 20th, fever returned, temperature ranging from 100° to 102°.

Emma Arseneau, sixteen years old ; taken on the 16th inst. ; was first seen by Dr. Blanchard on the morning of the 18th ; face bronzed, eyes brilliant, very much injected and suffused with yellow tinge ; terrible frontal pain ; tongue much coated, white in the centre, with edges red and tip pointed and red ; pulse frequent and feeble ; temperature, 105°.

On the morning of the 19th inst., she threw up black vomit in profuse quantity, which continued occasionally through the night. Urine loaded with albumen, which was tested morning and evening, showing each time an increasing per centage. Hemorrhage from the uterus came on the same day (just two weeks from the last menstrual epoch) and for twenty-seven hours the urine was suppressed.

On the 20th, 10 o'clock, A. M., threw up black vomit for the last time. In the evening found her comatose and

pulseless; died at 7 o'clock, P. M. The body became very yellow after death.

Another child, the youngest, between three and four years old, was taken with the fever on the 20th September; the attack being mild, but presenting distinctive features of yellow fever.

The surviving sick persons were examined by me in company with Dr. Blanchard, on the afternoon of the 23d September, at half-past three o'clock. The convalescing children were doing well; the younger one, Alice, was considerably prostrated, with still a coated tongue, the edges and tip deprived of epithelium and the papillæ prominent; gums full and spongy to the touch; adnata and surface of the body icteric; pulse soft, easily obliterated on pressure and 80 to the minute.

Dr. Blanchard exhibited to me a specimen of the black vomit thrown up by Miss Emma, which showed the distinctive features of the fluid.

This concludes the history of the cases of the fever which had occurred up to the period of my visit in the family of Mr. Arseneau and of his son.

Resuming the history of the propagation of the fever from the initial point of infection—the cabin of Louis Chance—and which relates to its spread among the colored residents of the settlement. The cabin nearest that of Chance is 100 feet to the rear. It was soon invaded; the parents and children, seven in number, falling sick consecutively with a short incubation of two to four days. Thence it spread to the next cabin, also distant 100 feet from the last, where its diffusion through the family pursued the same course and with like periods of incubation.

To the right of Chance's cabin and somewhat in advance, distant in like manner 100 feet, stood another cabin, the occupants of which next fell sick; then those in another immediately adjoining it became ill. From this last the disease spread to a larger house than the others, standing on a line with the premises of Mr. Arseneau, in which all

the members of the family underwent an attack of the fever.

These cabins include, with Mr. Arseneau's house, the settlement, or Brusle. Beyond this, on the other side of a cane field, from a quarter to a third of a mile removed, the fever invaded several other cabins, occupied by colored field hands who had commingled with the residents about Mr. Arseneau's, and in whom the propagation of the infection pursued the same course as in the first described cases.

Interrogating the parents relative to their own cases of the fever and those of the children, I learned that the fever in almost all instances had been mild in its type, no physician having been called to treat them, but that several of the children bled at the nose and from the gums. The whole number of colored persons who had been sick up to the evening of the 23d of September was 35, with no deaths.

The diagnosis of the fever prevailing in this settlement, made by Dr. Joseph Blanchard as yellow fever cases, was concurred in by me after a careful consideration of the clinical record of the cases submitted to me, the inspection of the black vomit and an examination of the convalescents more particularly Alice Arseneau, whose case was a severe and well-marked one, and I so reported to the National Board of Health through Dr. Bemiss.

The source of the infection in the white family of Mr. Arseneau is directly traced to importation from a dangerously infected town—Morgan City—through Louis Chance, and from direct contact and communication it spread from domicil to domicil.

This conceded, however mild the fever manifested in the colored persons attacked, none resulting fatally, it must be pronounced to be with them, as with the whites, yellow fever. Its benign type in them presents a striking physiological difference between the two races in the face of so formidable and destructive a disease as yellow fever.

That so large a number of colored persons should undergo attacks, and the probabilities indicate that none in the

settlement will escape it, is, perhaps, unprecedented and may be due to the fact that this community had never been exposed to an epidemic atmosphere of the disease.

It is well to observe that the secluded and salubrious character of the settlement afforded no security of itself from the danger of the fever spreading through the whole population from the incautious admission of one unsuspected infected person. Sufficient ground for advising active measures being at once put into operation for its isolation. This Dr. Blanchard, as a member of the Parish Board of Health, promised me should be done.

On his representation that the community had not the means of procuring the disinfectants necessary to be used in their premises and out grounds, he was instructed to make application to Dr. Bemiss for relief to this extent, and the articles needed were forwarded to him and will be properly and judiciously applied.

Very respectfully,

J. P. Davidson, M, D.,
Ins. Nat. Board of Health.

Franklin, La., December 5th, 1879.

Dr. S. M. Bemiss, New Orleans,

Dear Sir—In accordance with my promise to you, I submit the following report of yellow fever as it prevailed at Centreville and on the Cypremort prairie during the past autumn.

The town of Centreville is situated on the Bayou Teche, in the parish of St. Mary, five miles below Franklin, and contains a population of about 300 persons of both races. The first death from yellow fever in this vicinity was that of a Mr. Campbell, residing in the family of Mr. Whitworth, and occurred on the 25th of September. Dr. Abbay, who visited this case the day preceding his death, informed me that the patient threw up black vomit and turned very yellow before death. This was regarded by Dr. Abbay as a suspicious case, but as no opportunity had

been afforded for making close clinical observations, he did not feel justified in announcing it as a case of yellow fever.

The second case was Mrs. Huttendorf, who died on the 27th of September, two days after the death of Campbell. I saw this case a few hours previous to her death, with Dr. C. E. Allen, the attending physician, Dr. Ethan Allen, Dr. S. M. Abbay, and Dr. A. S. Gates. The presence of black vomit in abundance, and frequently ejected, the yellow hue of the skin, gaseous pulse, almost total suppression of urine, taken in connection with the history of the case during the three previous days after illness, left no room for doubt in regard to the diagnosis; and the physicians present, without a dissenting opinion, agreed in pronouncing it yellow fever. A small portion of the black vomit placed under a microscope presented clear and unmistakable evidence of the presence of blood; and a half ounce of urine, obtained by means of a catheter, was found to be highly albuminous, upon being submitted to the usual tests.

Ten days after the death of Mrs. Huttendorf, Mr. Felix Senette, one of our best citizens, was taken sick and died, after an illness of four days, with all the prominent symptoms of yellow fever.

Two children of Mr. Whitworth died, one on the 10th and the other on the 11th of October; the disease being as well marked in both instances as in those that preceded them. A third child of Whitworth's had a severe attack, but recovered, as did several others belonging to the same household. From the 11th day of October to this time, eight deaths have occurred in Centreville and the immediate vicinity from yellow fever alone, making a total mortality of thirteen out of about forty cases of the disease.

There is nothing to be said in reference to the treatment adopted by Drs. Allen and Abbay, except that it was strictly in accordance with the most orthodox views and teachings of the profession in New Orleans and elsewhere. One case which I saw in consultation with Drs. Abbay and Allen, I

regard as worthy special mention, because of its being a rare instance of recovery from yellow fever under circumstances that seemed to render the case almost hopeless. The patient, a mulatto, aged about 30, after recovering from black vomit, relapsed nearly a week afterwards and had constantly persistent passive hemorrhage from the gums, nose, stomach and intestines. The use of beef tea and stimulants, together with the regular administration of tincture of iron and fluid extract of Ergot, brought about a most gratifying change in the condition of the patient, and resulted in his complete recovery. As a remedy in the treatment of black vomit and the passive hemorrhages of yellow fever, I believe that Ergot is destined to hold the highest rank. The testimony in its favor, as is published in our Medical Journals, is at least sufficiently important to justify a thorough trial of its virtues in this disease.

All efforts to trace the origin of the epidemic at Centreville have thus far resulted in failure, and in the absence of well ascertained facts, we are compelled to fall back upon what might be considered mere theory and conjectures. It is known that a few days before Campbell was taken sick, a small steamer landed at the saw mill near Whitworth's residence, and that Campbell and others went aboard this steamer. It is also affirmed by some of the neighbors that Campbell had been on a visit to Berwick's Bay, where he might have come in contact with yellow fever. It is a noticeable fact, that every member of the Whitworth household contracted the disease, and that in the family of his brother-in-law, Hildreth, who lived only a few steps off, there were several cases and two deaths. Mr. W. D. Hays, who lived on the opposite side of the road, and his daughter died within a short time of each other, with all the symptoms of yellow fever in its most malignant form. The distance from Whitworth's to Huttendorf's is one-third of a mile, which fact seems to preclude the idea that any connection can be traced between Mrs. H.'s case, and the infection at Whitworth's. The fact that her husband is a merchant and that she was in the

habit of assisting him in his business, suggests the theory that she may have contracted yellow fever from infected goods.

It is a singular fact that no other case of fever occurred in this family, notwithstanding that there were at least five liable to take it. The only explanation of this circumstance is to be found in the fact that every precaution was adopted for the protection of the family, by thoroughly fumigating and disinfecting the house and premises, burning the bedding and other articles in the sick room, liable to preserve the infection, and a complete and careful cleansing of the whole establishment.

Yellow Fever at Cypremort.

Henry Beal, by occupation a merchant, died October 23d, after an illness of five days. His attack commenced with chilly sensations followed by intense fever and violent pain in the head, back and limbs. On the fourth day the fever subsided and he began throwing up black vomit. There was great abdominal tendernesss, and nausea and extreme restlessness continued to the end. The urine, which was almost totally suppressed, was highly albuminous, as shown by the usual tests of acid and heat. There was passive hemorrhage from the bowels, and he became very yellow a few hours before death. This case was treated by Dr. Maguire, who had regarded it from the first as a suspicious case, and warned the neighbors against visiting the store. On the day preceding the death of Beal, a young lady in the immediate vicinity died, under circumstances justifying, in my opinion, the belief that her disease was yellow fever. She was not seen by Dr. Maguire until the day before decease, and he was not at the moment prepared to express a positive opinion as to the cause of death. The fact that her attack commenced with fever and that she turned yellow and had hemorrhage from the gums during the last 24 hours, taking into consideration subsequent events which I propose to relate, leaves no doubt in my mind as to the character of the disease.

On Wednesday, October 22d, Dr. Maguire was called upon to see a son of Mr. F. H. Rodgers, 9 years old, and found him with high fever, headache, pain in back, etc. The usual domestic remedies, such as castor oil, warm teas, etc., had been administered. On calling again, he had "*fly vomiting*," which soon changed into genuine black vomit, and suppression of urine soon followed. The application of turpentine over the region of the kidneys, together with the use of a mild diuretic had the effect of restoring the secretion of urine, and the hypodermic of use 20 minims of ergot arrested the vomiting for the time being. Upon the next visit of the doctor, black vomit had returned, and on the following day death ensued. The second child of Mr. Rogers was seized with the same symptoms October 23d, and the case terminated fatally twelve hours after the death of the first. I saw both of the above cases, in consultation with Dr. Maguire, during their illness. A few days subsequently, Mr. and Mrs. Rogers and brother of the former were taken sick, and the two last died after four days' illness, with all the prominent symptoms of yellow fever. Mr. Rogers had a very severe attack, and was for many days considered hopelessly ill, but is now convalescent, as I am informed by Dr. Gates, his attending physician.

On Saturday, November 15th, I was called to see Mrs. Labauve, residing a very short distance from Beal's store, and nearly opposite the residence of Mrs. Dumesnil, where the first death occurred. This case presented all the prominent symptoms of yellow fever, such as pain in the had and back, high fever, restlessness, abdominal tenderness, yellow skin and vomiting on third day and albuminous urine. Dr. Maguire, who met me in consultation on the fourth day of her illness, remarked that he had never seen a case of yellow fever in which the symptoms were more clearly marked. In addition to the cases above described, some 12 or 15 have occurred to the present time, two of which were fatal. The family of Mr. Theodule Dumesnil, consisting of his wife and eight children were

taken sick within a few hours of each other under circumstances that rendered a correct diagnosis of the disease extremely difficult. The facts as furnished me by Dr. Maguire will appear in his letter immediately following:

Nov. 15. Married daughter of Mr. Dumesnil, Mme. Aristide Broussard, taken sick with 24 hours' fever (Thursday 13) and diarrhœa, fever over on Friday morning, took 4 cathartic pills, acted 9 times, feeling nauseated, took additional dose of oil, which purged her until she had rice water discharges. Was called Saturday, the 15th, to see her for the first time; advised stimulants and starch and laudanum injections, which checked diarrhœa; next day no reaction had set in, but jaundice showed itself; applied blister on stomach, continued restoratives, regretted absence of apparatus to inject blood in the veins. The patient has no suppression of urine, no vomiting, but jactitation, tossing of the arms, suffocating fits, all the train of symptoms showing blood exhaustion. She died on the 19th.

On the 17th (Monday), Mrs. Dumesnil, Florida, Eda, Blanche, Ulysse, Adèle, Maggie, Théodule, children of Mr. Dumesnil, were all taken with fever, vomiting of bile and bilious diarrhœa, diarrhœa giving way to the action of alteratives; fever lasting 24 hours, and leaving them more or less loss of appetite, but all of them going out and running to and fro, to the sugar house, etc., on third day.

Mrs. Dumesnil's case was as slight as the others, but grief incident on the death of her daughter seemed to choke her at times and continued the nausea; on Friday, she took a dose of oil; Friday morning, after having closely examined her and to her reply that she felt perfectly well, induced her, for cheerfulness sake, to leave her bed and set by the fire with the family. It seems she got worse in the evening, and Saturday morning, to my intense surprise and consternation, I found her throwing up black vomit, with suppression of urine. The catheter yielded a tablespoonful, highly albuminous; she had the strawberry tongue, spongy and bleeding gums. Since then symptoms increased in intensity, and patient died at 11½ A. M. How

can we account for all these cases, and what explanation give? I find but one.

On Friday, one of the neighbors of Beal, who, like the Dumesnil family, had left the neighborhood and had only lately returned, was taken sick with genuine, unmistable symptoms of yellow fever. The poison must have been lurking in the atmosphere, and Mrs. Dumesnil's system being below par, instead of entering into complete convalescence like the others, underwent slow poisoning, which in other circumstances she would have resisted. I am led to these conclusions by the observation of two cases in the epidemic of 1867, Escoubes and Lafau, reported by me in Dr. Delery's book on Yellow Fever. These two men had been on a debauch and were taken with diarrhœa (crapulosa, as the ancients called it), which was speedily checked. Instead of going back to their business, they lingered in bed *without fever* or *rise* of temperature; commenced on the third day showing ecchymoses on different parts of the body, spongy gums, black vomit and death, with hardly a few hours loss of consciousness before it: suppression of urine last 24 hours.

A. Maguire, M. D.

The cause of the outbreak of yellow fever in the Cypremort neighborhood, while it is involved in some uncertainty, is yet in my opinion susceptible of a reasonable explanation. There is good reason for the belief that the disease originated at Beal's store, and indeed, when it is considered that the persons who were first taken sick had been there a few days previous, to purchase goods, suspicion naturally looks in that direction for a solution of the mystery. It is known that on the 20th of October, Beal opened a bale of blankets just received from New Orleans, and that on the same day Miss Dumesnil and the children of Mr. Rogers visited the store. I am informed that Miss Dumesnil was seated on the blankets, and that a person present warned her of the danger of doing so, as the odor was strong, and that the blankets might be second hand, and contain in-

fection. There is a suspicion in the neighborhood, apparently well founded, that a negro employed on an adjoining plantation, who had recently been sick with what was supposed to be yellow fever, contracted the disease from clothing purchased at Morgan City. The fact that several well defined cases of yellow fever occurred subsequently on the same plantation seems to strengthen the belief that the negro referred to had something to do with bringing the infection into the neighborhood. It may be important to mention that a few days previous to the seizure of the two Rogers children, a negro woman in the quarters had been sick with what Dr. Maguire believed to be yellow fever, and that she was visited frequently by Mrs. Rogers, accompanied by the two children. Dr. M. thinks that this may afford the correct clue to the disease in Rogers' household, and that it is probably due to some clandestine communication with infected points through the untraceable wanderings of the African race. I have been able to ascertain upon unquestionable evidence, that the suspected blankets at Beal's store were from one of the most reliable houses in New Orleans, and there can be no good reason, in my opinion, for the belief that they had been previously used. It is not improbable, however, that they may have been in the New Orleans warehouse during the epidemic of 1878, and become saturated with yellow fever infection at that time. Similar instances have occurred in previous years, and several have come under my own immediate observation.

My experience and observation may not be extended enough to justify a decided opinion, as to whether yellow fever is or is not a native of the State, but as far as they go, I am convinced that it is not indigenous to any part of the United States. Nor would our country be afflicted with it, but for its importation from its foreign home. Having been brought here, it has flourished under the genial influences of our climate like an adopted child under bounteous surroundings, but it would invariably wither under the first decided frost, and be entirely stamped out before the

first winter month had expired. I might, at the expense of too great length, mention many facts in corroboration of this view, deduced from an extensive practice of thirty years, but will content myself with referring to the almost conclusive one of the complete immunity which both armies enjoyed from yellow fever during the terrible exposure which they had to undergo during the late four years of civil war. Soldiers representing every State and phase of climate known to the United States, composed these two armies. The armies were necessarily exposed to the malarious as well as the most healthy portions of the Southern States, and yet not one case of yellow fever is known to have occurred among them during that protracted struggle. This fact astonished and even perplexed the profession, and was difficult to account for, the most probable solution being found in the very rigid quarantine which Gen'l Butler enforced in New Orleans, where yellow fever had heretofore almost invariably originated.

In concluding this report, allow me to add, that to my mind the history of yellow fever in the United States for the past few years shows that it is no longer, as in the past, a disease affecting certain localities or communities lying in close proximity to the gulf coast, but has become, in its mysterious strides into the interior, a great national scourge, afflicting to the hearts of the people, and interrupting great avenues of trade and commerce, essential to the wholesome development of important industries and the material wealth of the country. Without going further into a discussion of the subject, as to whether yellow fever is indigenous to our soil, or of foreign importation, or whether, having been brought here, it has been propagated to such a degree as to guarantee it a fixed home in our midst (all of which shall and will be investigated by skill and science). I desire to address myself more particularly to the great practical question as to how this terrible scourge is to be stamped out, or, if this be impossible, how it is to be modified and mitigated in its effects. As quarantine officer

of this parish for years past, I am perhaps entitled to an opinion as to the efficacy of quarantine as a means of controlling this disease. I am prepared to assert with the utmost emphasis that my experience demonstrates that a strict quarantine will arrest the march and spread of the disease. Whenever I have been able to establish and enforce a rigid quarantine, the disease was effectually arrested, and when cases occurred within the quarantine lines, they could always be traced to a violation of the quarantine regulations.

But while I regard quarantine as a preventive against the yellow fever, I do not believe that any quarantine will be effectual that is not prosecuted and sustained by the National Government. A quarantine under State authority cannot be a just and proper one, because its necessity involves interests which concern, perhaps, several States, and which are not always so identical as to make any single State the proper judge or custodian of the interests of others; and therefore it is not to be expected that States, perhaps more selfish than individuals,, should protect rigidly a quarantine, to relax which would advance its own peculiar interests. And when it is considered that for more than 2000 miles great States draw their nourishment from the great commercial artery which, beginning beyond civilization and coursing its way through the great States of the North-west down through the fever-stricken South, finds its exit in the Gulf, it is not reasonable that any one of these States, with interests in some important particulars antagonistic, should be allowed to prescribe the regulations respecting a quarantine, that would be just or unbiassed. It is scarcely necessary to elaborate this view. The bare mention will recall to many tfie selfish, unwarranted and unnecessary restrictions which have been, for personal aggrandizement, enforced by States upon each other. Let us have, then, a quarantine that will be respected. The shotgun arrangement will not answer, and while the State might, with laws to enforce it, establish a

quarantine which in the main would be effectual, yet the authority of the State interested in a quarantine would not be sufficiently extensive to embrace all the requirements of the case. In my opinion, the only power competent to establish and enforce a proper and just quarantine is the National Government. If the National Government will take the quarantine in charge and protect it with law, regulated and directed with skilled intelligence, patriotism, and in a true spirit of justice and equity, yellow fever will either be entirely stamped out or restricted within such narrow limits that it would never become epidemic. Among the many obvious reasons why the National Government should control the quarantine of the country, the following strikes me as the most potent: In order to enforce a rigid and effectual quarantine, it will be necessary to exercise authority, which, if restricted to State lines, will be impotent and useless. An effectual quarantine must be under the control of authority extending over all the States. This will appear evident when you recur to the instances of conflict of views and interests, too often the result of groundless fears and selfish greed, which have occurred, not only between States, but between parishes and cities and communities, acting wholly with reference to local interests, without one element of consideration for the general welfare. The effect of such a quarantine would evidently paralyze and destroy valuable and important interests which are entitled to just protection, instead of wanton and unnecessary oppression. But again, an effectual quarantine involves the expenditure of money which no single State should be expected to incur when all are interested. The epidemics of the last two years not only aroused the sympathies and enlisted the active aid of the whole country, but in a pecuniary and material point of view affected to a more or less degree every section of the United States. Should this not, then, be a sufficient warrant for a National Quarantine? Surely such a provision, directed by judicious regulations and well-guarded restrictions, need find no ob-

jectors. Less than this would prove futile and unsatisfactory.

Very respectfully,
Your obedient servant,
C. M. Smith, M. D.

The following propositions may be stated in closing this report:

First. There are no facts in this report sustaining a theory that yellow fever is indigenous to any part of Louisiana.

Second. There are no facts sustaining a theory that its infection is capable of a "new creation," or "*de-novo* origin" in Louisiana.

Third. There are no facts sustaining a theory that yellow fever poison has ever become permanently domiciled in Louisiana.

Fourth. Numerous and indisputable facts show that the fellow fever poison has been often imported from foreign countries into Louisiana, and afterwards carried from the first point of infection to other parts of the State.

Fifth. The communication of yellow from one town to another, or from one rural location to another, is effected in one or the other of two modes; (*a*) it is carried in the person of an individual already sick with yellow fever, or who being in the incubative period falls sick after reaching the locality; or, (*b*) the infection is transported in some form of fomites.

Sixth. In no other manner than through one or the other of these agencies can new foci of distribution of yellow fever infection be formed, which are separated by any considerable distances, say two or three miles, from an infected locality.

Seventh. No facts sustian a theory that the poison of yellow fever is capable of being wind-wafted through any considerable interval of space in such a state as to preserve its noxious properties.